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Proceedings of the American Academy of Arts and Sciences.

VOL. XLII. No. 1. — MAY, 1906.

CONTRIBUTIONS FROM THE GRAY HERBARIUM OF HARVARD UNIVERSITY.

NEW SERIES. — No. XXXII.

STUDIES IN THE EUPATORIEAE.

I. Revision of the Genus *Piqueria.*

II. Revision of the Genus *Ophryosporus.*

III. The Genus *Helogyne* and its Synonyms.

IV. Diagnoses and Synonymy of *Eupatorieae* and of certain other *Compositae* which have been classed with them.

BY B. L. ROBINSON.

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STUDIES IN THE EUPATORIEAE.

By B. L. Robinson.

Presented March 14, 1906. Received February 21, 1906.

Introductory.

During the summer of 1905 the writer spent some weeks in visiting several of the larger herbaria of Europe in order to examine and photograph plants not hitherto authoritatively represented in the Gray Herbarium. In the course of this work considerable attention was given to the tropical American species of the great genus *Eupatorium* and several allied genera. As must be expected in all such large and difficult groups, which have not been subjected to recent revision, the study of the type-specimens of several hundred species has yielded much new information on the synonymy and proper classification of the group. The collections examined were: (1) the herbarium of the Museum of Natural History in Paris, where the herbaria of Jussieu, Lamarck, and Michaux were consulted, and special attention given to an admirably preserved and well-nigh complete set of the tropical American plants collected by Humboldt and Bonpland and critically described by Kunth in the Nova Genera et Species; (2) the rich private herbarium of the DeCandolle family in Geneva, including the invaluable Prodromus types; (3) the herbarium of the Imperial Museum of Natural History at Vienna, noteworthy among other ways by containing the fullest series available of the species of Jacquin and an excellent series of the plants of Pohl and species of Poeppig and Endlicher; (4) the herbarium of the Royal Botanical Museum at Berlin, remarkably rich in South American as well as in Old World types and in the study of *Eupatorieae* specially noteworthy by exhibiting to its fullest extent the recent critical work of Dr. Hieronymus; (5) Professor Urban's large and carefully selected West Indian herbarium; (6) the herbarium of the Botanical Museum of the University of Copenhagen, containing, together with much other material of interest, the extant types of Vahl; (7) the herbarium of the Linnean

Society of London, where special attention was given to the types of Linnaeus filius and of Sir James Edward Smith; (8) the herbarium of the Royal Botanical Gardens at Kew, noteworthy to the student of the *Eupatorieae* by exhibiting the very numerous Brazilian types of Gardner, Hooker & Arnott, Bentham, and Baker, as well as the Mexican work of Hemsley; (9) the herbarium of the British Museum of Natural History, including, among many other specimens of high interest, the plants of Clayton, Walter, and Philip Miller.

The writer would here express his sincere thanks to all those in charge of these herbaria for their cordial hospitality, uniform courtesy, and valuable aid during his researches. He is also indebted to Messrs. Oakes Ames and A. A. Eaton for several excellent photographs of type-specimens at Paris, to Mr. H. Hua for a critical comparison of a Peruvian *Piqueria* in the herbarium of Jussieu, to Miss Mary A. Day, Librarian of the Gray Herbarium, for bibliographical assistance, and to Mr. F. V. Coville and Dr. J. N. Rose for the loan of the material of *Piqueria* belonging to the United States National Museum.

About four hundred photographs of types were taken in the European herbaria, some important exchanges effected, and many notes and sketches prepared, which it is hoped may form an accurate basis for considerable work on the group concerned. In the present paper only a small part of the results of the summer's investigation can be presented, but as any complete or monographic treatment of so large a group must be delayed for a considerable time, it seems best to record such identities and synonymy as can be at once stated with definiteness, in order that certain traditional errors may not become more fixed by longer usage. The nomenclature adopted is that recommended by the international congress at Vienna.

I. Revision of the Genus Piqueria.

Piqueria is the typical genus of the *Piquerinae*, a small subtribe of the *Eupatorieae*. The *Piquerinae* are chiefly marked by their blunt anthers, which entirely lack the more or less expanded, oblong, or lanceolate prolongation of the connective, which is present almost without exception in other *Compositae*. In this subtribe the genus *Piqueria* is characterized by a complete absence or very rudimentary development of its pappus. Its natural affinities are obviously on one hand with *Ophryosporus*, which scarcely differs save in the presence of a well-developed setose pappus, and on the other hand with *Alomia* and *Ageratum*, which are habitally approached by the species of *Piqueria* belonging to the subgenus *Phalacraea*. Geographically *Piqueria* extends from the Sierras of northern Mexico through central

and southern Mexico, Central America, and Andean South America to northern Chili. The only known exception to this range of the genus is the occurrence of *P. trinervia* Cav. in the mountains of Haiti, a station called to my attention by Professor Urban. The genus is capable of pretty clear division into four subgenera, of which *Erythradenia* is Mexican, *Eupiqueria* is of Mexico, Central America, and Haiti, *Phalacraea* of the moister Andean region from Colombia to Ecuador, and *Artemisioides* characteristic chiefly of the drier parts of the Andes of Peru and Chili.

Since the treatment of some eight species in DeCandolle's Prodromus in 1836 no effort has been made to revise the genus, although the number of its species has been considerably increased since that time. The following revision has been drawn up after personal examination of nearly all the specific types and of all the specimens of the genus found in several of the leading herbaria of Europe.

PIQUERIA Cav. (in memoriam Andreae Piquerii — hispanice, *Andrés Piquer* — medici hispanici et auctoris philosophici). — Capitula parva homogama 3–∞-flora, involucro ovoideo vel cylindrico vel campanulato, squamis saepius paucis subaequalibus laxe imbricatis vel subuniseriatis, receptaculo nudo plano vel leviter convexo. Corollae tubulosae albae vel caerulescentes, tubo proprio saepissime brevi piloso vel glanduloso-puberulo, faucibus saepe ampliatis, dentibus limbi ovato-deltoideis suberectis vel saepius ovati-oblongis et patentibus acutiusculis. Achaenia 5-angulata prismatica deorsum plus minusve angustata basi saepe oblique callosa apice rotundata calva vel disco annulari deciduo vel rarissime setis paucis brevibus coronata. Styli rami filiformi-clavellati longe exserti saepe valde recurvati. Antherae breviter oblongae, connectivo apice nec incrassato nec appendiculato. — Ic. iii. 18, t. 235 (1795); Usteri, N. Ann. xviii. 62 (1800); Pers. Syn. ii. 397 (1807); Rees, Cycl. xxvii. (1814); Cass. Bull. Soc. Philom. 1819, p. 127 (1819), et Dict. Sci. Nat. xli. 115 (1826); Less. Syn. 154 (1832); DC. Prod. v. 104 (1836); Endl. Gen. 366 (1838); Reichenb. Nom. 97 (1841); Jameson, Syn. Pl. Aequat. ii. 75 (1865); Benth. et Hook. f. Gen. ii. 238 (1873); Hemsl. Biol. Cent.-Am. Bot. ii. 77 (1881); Hoffm. in Engl. et Prantl, Nat. Pflanzenf. iv. Ab. 5, 133 (1890); Hook. f. et Jacks. Ind. Kew., ii. 544 (1894); Bailey et Scott in Bailey, Cycl. Hort. iii. 1357 (1901). *Phalacraea* DC. Prod. v. 105 (1836); Endl. Gen. 366 (1838). *Stevia* Hort. — Herbae annuae vel perennes vel frutices. Caulis erectus vel decumbens foliosus ramosus. Folia opposita vel alterna petiolata vel subsessilia integra vel saepius serrata vel dentata vel rarius angulata.

Species 19 generaliter bene distinctae quarum 5 Mexicanae sunt, una Mexicana et Centrali-Americana etiam Haitensis, reliquiae Andium montium Australi-Americae incolae.

Clavis subgenerum.

a. Corollae fauces tubulosi a tubo proprio non distincti. Folia alterna, glanduloso-punctata. . . . . Subg. I. ERYTHRADENIA.

a. Corollae fauces ampliati a tubo proprio bene distincti. Folia opposita vel alterna. *b.*

b. Corollae fauces turbinati, brevissimi, dentibus limbi breviores; tubus proprius villosus vel rarissime glanduloso-puberulus. Subg. II. EUPIQUERIA.

b. Corollae fauces campanulati vel cylindrici dentibus limbi longiores. Corolla externe praesertim tubo glanduloso-puberula. *c.*

c. Capitula 4–5-flora. . . . . Subg. III. ARTEMISIOIDES.

c. Capitula 15–∞-flora. . . . . Subg. IV. PHALACRAEA.

Subg. I. ERYTHRADENIA, subg. nov. Capitula circa 6-flora sessilia in panicula ampla pyramidata disposita. Corolla subcylindrica glanduloso-puberula sine faucibus distinctis; dentibus brevissimis. Folia alterna. — Species unica habitu distinctissima.

1. P. PYRAMIDALIS Robinson, caule tereti maculato 2–2.6 m. alto omnifariam puberulo-velutino; foliis alternis magnis longe petiolatis late ovatis vel suborbicularibus angulatis vel leviter lobatis crenato-dentatis 3-nerviis, basi rotundatis vel cordatis supra viridibus subtus griseis et glandulis parvis globosis numerosissimis brevissime stipitatis rubris munitis in nerviis et venis reticulatis velutino-tomentellis; panicula ampla folioso-bracteata, ramis ascendentibus; capitulis in glomerulis sessilibus ca. 6-floris; involucri squamis anguste oblongis dorso pubescentibus; corollis anguste tubulosis externe glanduloso-punctatis, dentibus brevissimis; achaeniis 5-angulatis, basin versus leviter angustatis parum obliquis, costis sursum hispidulis. — Proc. Am. Acad. xxxvi. 475 (1901). — MEXICO: in rupibus umbrosis montium supra Igualam, alt. 1250 m., *Pringle*, n. 8389 (hb. Gray, hb. U. S. Nat. Mus.).

Subg. II. EUPIQUERIA DC. Capitula parva 3–4-flora cymoso-corymbosa vel laxe paniculata, involucro anguste obovoideo vel subcylindrico, squamis 3–4 subaequalibus obovatis vel oblongis concavis tenuibus, apice obtusis vel rotundatis mucronatis eroso-subciliatis rarius dorso pubescentibus. Corollae tubus proprius extus pubescens, dentibus limbi oblongo-lanceolatis acutiusculis patentibus.— Prod. v. 104 (1836); Endl. Gen. 366 (1838); Hoffm. in Engl. & Prantl, Nat. Pflanzenf. iv, Ab. 5, 133 (1890) pro parte; nec Gardn.; nec Walp. — Vel herbae annuae vel perennes vel frutices. Folia opposita lanceolata vel ovata breviter petiolata.

Clavis specierum.

a. Involucri squamae dorso pubescentes. . . . . 2. *P. triflora.*
a. Involucri squamae dorso glabrae. *b.*
b. Herba annua. Inflorescentia perlaxa, racemiformis. . . 3. *P. laxiflora.*
b. Herbae perennes. Inflorescentia plus minusve corymbosa. Achaenia basi valde obliqua. *c.*
c. Caulis omnifariam pilosus vel puberulus. . . . . 4. *P. pilosa.*
c. Caulis bifariam solum puberulus. . . . . 5. *P. trinervia.*
b. Frutices. Achaenia basi subrecta. . . . . 6. *P. serrata.*

2. P. TRIFLORA Hemsl., caule tereti vel supra subhexagono ubique pilosiusculo folioso 4 dm. alto plus minusve ramoso; foliis oppositis anguste lanceolatis basi perangustatis subsessilia caudato-attenuatis sed in apice vero obtusiusculis 3–6 cm. longis 5–9 mm. latis utrinque crispe puberulis remote serratis vel subintegris; inflorescentia laxe ramosa racemiformi; bracteolis linearibus; pedicellis filiformibus unilateraliter pilosis 3–7 mm. longis; capitulis numerosis obovoideis; involucri squamis 3 obovatis carinatis 3-nerviis scarioso-marginatis eroso-ciliatis apice rotundatis mucronatis, dorso hirsuto-pubescentibus; flosculis 3; corolla alba; tubo proprio extus lanato; faucibus quam dentes 5 oblongo-lanceolati brevioribus; achaeniis atro-fuscescentibus glabris 1.7 mm. longis. — Biol. Cent.-Am. Bot. ii. 77 (1881). — MEXICO: Cerro de Pinal, *Seemann*, n. 1478 (hb. Kew., hb. Gray).

3. P. LAXIFLORA Robinson & Seaton, herbacea tenuis laxe et copiose ramosa; radice annua; caule tereti viridi 4–5 dm. alto piloso; foliis oppositis, ovatis vel ovato-lanceolatis serratis 3–5-nerviis sparse pilosis basi cuneatis petiolatis apice obtusiusculis; inflorescentia trichotomo-furcata racemiformi; bracteolis subfiliformibus 2–4 mm. longis; pedicellis fere capillaribus 1 cm. longis flexuosis; capitulis obovoideis parvis 4-floris; involucri squamis viridibus obovatis mucronatis erosis tenuibus persistentibus; corollis albis; tubo perbrevi externe pubescenti; achaeniis atro-fuscescentibus 5-angulatis glabris lucidis. — Proc. Am. Acad. xxviii. 107 (1893). — MEXICO: in rupibus frigidulis convallium montanarum prope lacum Chapalam, *Pringle*, n. 4333 (hb. Gray, etc.); montibus prope Durango, *Pringle*, n. 10,067 (hb. Gray).

4. P. PILOSA HBK., herbacea perennis ramosa 5–13 dm. alta; caule subtereti omnifariam glanduloso-puberulo saepe purpurascenti folioso; foliis oppositis petiolatis ovatis serratis acuminatis 4–6 cm. longis 2–3 cm. latis utrinque puberulis; petiolo 4–10 mm. longo glanduloso-puberulo; inflorescentia trichotoma cymoso-corymbosa; capitulis parvis numerosis saepe congestis 4-floris; involucri squamis 4 ellipticis margine scariosis erosis apice rotundatis mucronatis dorso glabris; corollis albis, tubo brevi piloso-lanato, faucibus brevibus, dentibus

limbi 5 lanceolati-oblongis acutiusculis patentibus; achaeniis 5-angulatis glabris 2 mm. longis. — Nov. Gen. et Spec. iv. 153 (1820); Cass. Dict. Sci. Nat. xli. 116 (1826); DC. Prod. v. 104 (1836); Hemsl. Biol. Cent.-Am. Bot. ii. 77 (1881). *P. trinervia*, var. *pilosa* O. Kuntze, Rev. Gen. i. 355 (1891). *P. Pringlei* in sched. Pringlei pro parte, non Robinson & Seaton. — MEXICO (praecipue in montibus partis centralis rei publicae): *Humboldt et Bonpland*, n. 4342 (hb. Par.); *Alaman* (hb. DC.); Real del Monte, *Ehrenberg*, n. 481 (hb. Berol., hb. Gray); *Bates* (hb. Kew.); silvis deserti Vieja, *Bourgeau*, n. 828 (hb. Berol.); *Bourgeau*, n. 825 partim (hb. Par.); *Uhde*, nn. 414, 416 (hb. Berol.); Tacubaya, *Schaffner*, n. 300 (hb. Berol.); *Pringle*, nn. 3624, 4119, 4285 partim, 7930 (hb. Gray, etc.); Sierra de Pachucha, Hidalgo, *Rose*, n. 8867 (hb. U. S. Nat. Mus.).

Var. **Pringlei** (Robinson & Seaton), n. comb., caule et inflorescentia omnino eglandulosis pubescentibus; pilis brevibus albidis crispis. — *P. Pringlei* Robinson & Seaton, Proc. Am. Acad. xxviii 107 (1893). — MEXICO: saepe cum forma typica: pinetis convallis mexicanae, *Bourgeau*, n. 825 partim (hb. Gray, hb. Kew.); *Schmitz*, n. 398 (hb. Imp. Mus. Vindob.); *Pringle*, n. 4285 partim (hb. Gray); Sierra de las Cruces, alt. 3000 m., *Pringle*, n. 11,563 (hb. Gray).

5. P. TRINERVIA Cav., herbacea perennis erecta ramosa; radice fibrosa; caule tereti bifariam puberulo folioso 4–7 dm. alto; foliis oppositis lanceolatis vel anguste ovatis serratis subglabris 3 (–5)-nerviis crassiusculis basi cuneatis apice attenuatis; capitulis parvis saepius 4-floris laxe cymoso-corymbosis vel rarius in inflorescentia perlaxa racemiformi dispositis; involucri squamis ellipticis erosis margine tenuibus apice rotundatis mucronatis; corollis albis, tubo proprio brevi piloso, faucibus brevissimis, dentibus limbi 5 ovato-oblongis patentibus; achaeniis atrofuscis 5-angulatis basi oblique sigmoideo-callosis. — Ic. iii. 19, t. 235 (1794); Willd. Spec. iii. 1748 (1804); Pers. Syn. ii. 397 (1807); Jacq. f. Ecl. i. 70, t. 48; Bot. Mag. t. 2650 (1826); Cass. Dict. Sci. Nat. xli. 116 (1826); DC. Prod. v. 104 (1836); Hemsl. Biol. Cent.-Am. Bot. ii. (1881); Rose, Contrib. U. S. Nat. Herb. v. 231 (1899); Bailey, Cycl. Am. Hort. iii. 1357 (1901). *P. trinervis* J. E. Smith in Rees, Cycl. xxvii. n. 1 (1817). *P. ovata* G. Don in Loud. Hort. Brit. 337 (1830). *Ageratum febrifugum* Sess. ex DC. Prod. v. 104 (1836). *Stevia febrifuga* Moc. ex DC. l. c. *S. serrata* et *serratifolia* Hort. — MEXICO: vulgaris et late distributa praecipue in arvis et collinis ad 2900 m. alt. Exsiccatis visis: *Aschenborn*, nn. 201, 580; *Bates*; *Berlandier*, nn. 704, 1210, 1241; *Bilimek*, n. 578; *Botteri*, nn. 13, 391; *Bourgeau*, nn. 144, 149, 288, 1402; *Conzatti et González*, n. 1087; *Coulter*, n. 721; *Deam*; *Ehrenberg*, n. 480; *Galeotti*, nn. 2108, 2414,

2482; *Graham*, nn. 22, 23; *Halsted*, n. 27; *Harris*; *Humboldt et Bonpland*, nn. 4228, 4258, 4401; *Karwinski*, n. 104; *Kerber*, n. 328; *Lagasca*, n. 128; *Liebmann*, n. 110; *Nelson*, nn. 1720, 1928, 3176, 3463; *Palmer*, nn. 85, 313, 496½, 596; *Parry et Palmer*, nn. 85, 314; *Pringle*, nn. 241, 1748, 5686, 9053, 9951; *Purpus*, n. 55; *Rose*, n. 2767; *Sartorius*; *Schaffner*, n. 235; *Schiede*, n. 303; *Schmitz*, n. 73; *Schumann*, n. 62; *Seaton*, n. 276; *C. et E. Seler*, n. 1153; *C. L. Smith*, n. 1664; *L. C. Smith*, n. 291; *Uhde*, nn. 349, 412, 413, 448. GUATEMALA: *Heyde et Lux*, n. 3399 pl. exsic. J. D. Smithii (hb. Kew., hb. U. S. Nat. Mus.). COSTA RICA: *Cooper*, n. 5811 pl. exsic. J. D. Smithii (hb. Gray, hb. Kew.). HAITI: in montibus Furcy, *Picarda*, n. 1521 (hb. Urb.), forma capitulis paullo majoribus ad var. luxuriantem spectans.

NOTA. — Herba a horticultoribus sub nomine "Stevia" late culta et ob inflorescentia eleganter ramosa bene amata, a Mexicanis pro febrifuga, etiam a Cubensibus ut dicitur loco condimenti usa.

NOMINA VERNACULA: Empueshta, Hierba de San Nicolas, Hierba del tabardillo, Xoxonitzal, Xoxonitztac, Yoloxiltic; omnia fide cl. G. V. Alcocer.

Var. VARIEGATA Hort. ex Bailey, Cycl. Am. Hort. iii. 1358 (1901), est forma calidariarum foliis albo-marginatis.

Var. NANA Hort. ex Bailey, l. c., 1357, humilior 2–3.5 dm. alta foliosissima. — Forma ut videtur mexicana in calidariis saepe culta. Speciminia inculta sunt rara, e. g. MEXICO: *Méhédin*, 1864–5 (hb. Par.), Zacatecas, *Deam*, n. 141 (hb. Gray).

Var. LUXURIANS O. Kuntze, foliis ovatis argute serratis 4–9 cm. longis 2.3–4 cm. latis 5-nerviis glabriusculis basi rotundatis, petiolo ca. 1 cm. longo; capitulis quam ea formae typicae distincte majoribus; achaeniis 2.4 mm. longis. — Rev. Gen. i. 355 (1891). — COSTA RICA: silvis montanis in declivitatibus montis ignivomi Irazu, *C. Hoffmann*, n. 171 (hb. Gray); *Kuntze*; *Pittier*, n. 14,080 (hb. Gray).

6. P. SERRATA Gray, fruticosa ramosa primo aspectu glaberrima; caule tereti pallide viridi obsolete bifariam puberulo folioso; foliis oppositis ovati-oblongis acuminatis grosse arguteque serratis basi abrupte angustatis breviter petiolatis 7–9 cm. longis 2.5–4 cm. latis glaberrimis; capitulis cymoso-corymbosis numerosis 3-floris; involucri squamis elliptico-ovatis 3-nerviis apice rotundatis mucronatis margine ciliato-erosis dorso glabris; corollis albis, faucibus brevissimis, dentibus limbi oblongo-lanceolatis patentibus glabris, tubo proprio breviter subglanduloso-puberulo; achaeniis 5-angulatis glaberrimis annulo deciduo coronatis basi callosis parum obliquis. — Proc. Am. Acad. xv. 25 (1880). — MEXICO: in montibus Alvarez prope San Luis Potosi, *Parry et*

Palmer, n. 496 (hb. Gray, hb. U. S. Nat. Mus.), *Palmer*, n. 199 (hb. Gray).

Var. (?) ANGUSTIFOLIA Robinson & Greenman, foliis angustioribus lanceolatis obscure et remote serrato-crenatis basi cuneato-angustatis; capitulis eis formae typicae exacte similibus. — Am. Jour. Sci. l. 151 (1895). — MEXICO: in montibus Sierra de San Felipe, Oaxaca, alt. 2800–3300 m., *Pringle*, n. 4827 (hb. Gray, etc.), *Nelson*, n. 1049 (hb. Gray), *C. L. Smith*, n. 605 (hb. U. S. Nat. Mus.).

Subg. III. ARTEMISIOIDES DC. Capitula 3–4-flora, involucro subcylindrico, squamis saepius 4 subaequalibus. Corollae externe glanduloso-punctatae, glandulis minutis rubescentibus brevissime stipitatis; faucibus cylindricis vel subcylindricis tubo proprio subaequantibus, quam dentes limbi distincte longioribus. Achaenia deorsum plus minusve angustata parum obliqua. — Prod. v. 105 (1836). — Frutices ramosi andini. Folia opposita vel alterna rhomboidea vel lanceolata vel linearia basi cuneata petiolata.

Clavis specierum.

a. Folia alterna fasciculata. *b*.
b. Capitula in panicula laxiuscula subrigida disposita. Involucri squamae obtusiusculae. . . . . 7. *P. galioides*.
b. Capitula congesta. Involucri squamae breviter acuminatae vel attenuatae. Pappus e setis paucis brevissimis compositus vel nullus. *c*.
c. Inflorescentia thyrsoidea. Involucri squamae lineari-lanceolatae. 8. *P. pinifolia*.
c. Inflorescentia cymosa. Involucri squamae rhomboideo-oblongae acutatae vel breviter acuminatae. . . . . 9. *P. Cumingii*.
a. Folia opposita. *d*.
d. Involucri squamae 3.5–5 mm. longae. *e*.
e. Inflorescentia fulvo-tomentosa. Folia flabelliformi-ovata sinuato-dentata. . . . . 10. *P. pubescens*.
e. Inflorescentia obscure glanduloso-puberula. Folia ovata serrato-dentata. *f*.
f. Involucri squamae apice eroso-ciliatae. . . . . 11. *P. Mathewsii*.
f. Involucri squamae dorso granulatae nec erosae nec ciliatae. 12. *P. floribunda*.
d. Involucri squamae 2–2.7 mm. longae. *g*.
g. Capitula prope apices ramorum late patentium paniculae congesta. 13. *P. densiflora*.
g. Capitula (numerosissima) spicato-racemosa in panicula subfastigiata folioso-bracteata disposita. *h*.
h. Folia lanceolata dentata vel incisa. Capitula sessilia. 14. *P. peruviana*.
h. Folia caulina linearia subintegra. Capitula breviter pedicellata. 15. *P. Hartwegi*.

7. P. GALIOIDES DC., fruticosa ramosa glabriuscula; foliis alternis fasciculatis linearibus opacis utrinque attenuatis acutis sessilibus integris subenerviis 1.5–2 cm. longis 2 mm. latis; panicula rigidiuscula patente ramosa pyramidali nudiuscula; capitulis haud congestis racemoso-spicatis subdivaricatis 3-floris; involucri ca. 4 mm. longi squamis subobtusis. — Prod. v. 105 (1836). — PERU: in Cordilleriis, *Haenke*, 1834 (hb. DC.). Species ut videtur bene distincta sed vix satis nota.

8. **P. pinifolia** (Phil.) Hieron. in herb., fruticosa ramosa 6–12 dm. alta, novellis plus minusve glutinosis; ramis arcuato-ascendentibus teretibus foliosissimis cortice griseo-flavido tectis; foliis in fasciculis alternis vel irregulariter sparseque dispositis suberectis anguste lanceolatis integerrimis vel utroque cum 2–3 dentibus brevibus patentibus subremotis instructis apice modice acutis basi attenuatis 1.5–3 cm. longis 2–6 mm. latis utrinque puberulis; thyrsis ovoideo-cylindricis 6–12 cm. longis 3–5 cm. crassis, ramulis rigidiusculis patentibus; capitulis in apice ramuli saepius 2–3 approximatis sessilibus 4–5-floris; involucri squamis 5 lineari-lanceolatis attenuatis subaequalibus laxis stramineis dorso rotundatis 1-nerviis 6 mm. longis glanduloso-puberulis margine involutis; corollis roseis tubulosis 3.5 mm. longis glanduloso-puberulis in fauces plus minusve ampliatis, dentibus limbi ovato-deltoideis patentibus; achaeniis 5-angulatis basi attenuatis puberulis summo saepius calvis rarius obsolete setuliferis. — *Stevia pinifolia* Phil. Ann. Mus. Nac. Chil. sec. 2 (botanica), 37 (1891); Reiche, Fl. de Chil. iii. 262 (1902). *Piqueria pinifolia* Hieron. in herb. Berol. — CHILI: Atacama, *Philippi* (hb. Berol.). PERU: In montibus Andinis supra Palcam, *d'Orbigny* (hb. Par.): Pachia, alt. 1200–1900 m., *Pearce*, Sept. 1862 (hb. Kew.). Specimen Pearcei est a cl. Benthamio (Gen. Pl. ii. 238) ad hoc genus sed sine nomine relatum.

9. **P. Cumingii**, n. sp., fruticosa ramosa, novellis vernicosis, ramis teretibus flavidis foliosissimis valde patentibus juventate pulverulento-puberulis; foliis fasciculatis anguste oblanceolatis obtusis vel obtusiusculis integerrimis vel cum dentibus unicis vel pluribus munitis 1–1.6 cm. longis 2–4 mm. latis basi attenuatis uninerviis glaberrimis plus minusve viscosis; inflorescentiis arcte congestis corymbosis, ramulis valde patentibus arcuato-ascendentibus; capitulis constipatis 5-floris; involucri squamis oblongis vel subrhomboideis acutis saepe vernicosis 5 mm. longis; corollis 3 mm. longis, tubo proprio quam fauces tubulosi breviori glanduloso-pulverulento; achaeniis pallidis substramineis prismaticis 5-angulatis 3 mm. longis basi attenuatis callosis in faciebus puberulis. — PERU MERIDIONALI et CHILI SEPTENTRIONALI: Cobija,

Iquiqui, et Arica, 1831, *H. Cuming*, n. 953 (hb. Kew.); Cobija, 1841, *Gaudichaud* (hb. Berol.).

10. P. PUBESCENS J. E. Sm., fruticosa oppositiramea 1–2 m. alta; caulibus teretibus a cortice griseo tectis; ramulis foliosis glanduloso-tomentellis; foliis oppositis, late rhomboideis, grosse arguteque inaequaliter dentatis basi cuneatis vel abrupte angustatis graciliter petiolatis 1.4–3.3 cm. longis 1–3.6 cm. latis sub lente utrinque papilloso-granulosis, petiolo fulvo-tomentoso 8–18 mm. longo; capitulis numerosis congestis corymbosis 4–5-floris; involucri squamis anguste oblongis attenuatis dorso glanduloso-puberulis; corollis albis vel (?) flavidis. — J. E. Smith in Rees, Cycl. xxvii. n. 2 (1814); DC. Prod. v. 105 (1836). *P. quinqueflora* Cass. Bull. Soc. Philom. 1819, p. 128 (1819), et Dict. Sci. Nat. xli. 116 (1826); DC. Prod. v. 105 (1836). — PERU: spec. typ. in hb. L. f. (hb. Linn. Soc.); *Dombey* (hb. Par.); *Mathews*, n. 946 (hb. Gray); Obrajillo, *Wilkes* (hb. Gray, hb. U. S. Nat. Mus.); Lima, *Cuming*, n. 1045 (hb. Brit. Mus.); ad pedem montis Amancaes prope urbem Lima, 21 Julio, 1876 (floribus albis), *André*, n. 4117 (hb. Gray); in rupibus prope Lima, 30 Nov. 1901, *Weberbauer* n. 9 (hb. Berol.).

11. **P. Mathewsii**, n. sp., suffruticosa oppositiramea; ramis tenuibus rubescentibus glaberrimis; foliis oppositis membranaceis ovatis crenato-serratis vel grosse-dentatis acuminatis graciliter petiolatis 3–5-nerviis utrinque viridibus glabris 4–6 cm. longis 2–3 cm. latis, petiolo 7–10 mm. longo; panicula laxe ramosa, ramis gracilibus teretibus puberulis valde patentibus vel arcuato-ascendentibus prope apicem capitula subcorymbosa ferentibus; capitulis 4–5-floris; involucri squamis breviter acuminatis vel saepius obtusiusculis ca. 5 mm. longis apice ciliolatis; corollis valde exsertis, tubo proprio gracili glanduloso-puberulo, faucibus cylindricis bene distinctis quam dentes limbi longioribus. — PERU: Purruchuca, *Mathews*, n. 1015 (hb. Kew.).

12. P. FLORIBUNDA DC., fruticosa oppositiramosa minutissime puberula vel subglabra; ramis patentibus griseo-fuscis foliosis; foliis oppositis ovatis serrato-dentatis acutis basi rotundatis vel abrupte angustatis graciliter petiolatis subglabris 1–2 cm. longis; panicula patente ramosa pyramidali 7–11 cm. lata; capitulis numerosis 4–6-floris; involucri anguste cylindrici squamis oblanceolati-oblongis vel -linearibus 3-costatis dorso convexis et glanduloso-puberulis acutis; corollis albis, tubo proprio gracili dense glanduloso-atomifero quam fauces cylindrici subglabri breviori, limbi dentibus deltoideis brevibus; achaeniis gracillimis prismaticis 5-angulatis basi gradatim attenuatis subrectis, angulis glanduloso-hispidulis. — Prod. v. 105 (1836); Phil. Cat. Pl. Vasc. Chil. 174 (1881). — PERU: in montibus Andinis, *Haenke*,

1834 (hb. DC.); Obrajillo, *Wilkes* (hb. Gray, hb. U. S. Nat. Mus.); in rupibus inter Matucana et Tambo, alt. 2370–2650 m., *Weberbauer*, n. 115 (hb. Berol.). CHILI: *Haenke* sec. DC. sed dubitative.

NOTA. — Habitatio originalis a DC. data "montanis Oronocensibus" possit forsan errore pro *montanis Huanoccensibus*.

13. P. DENSIFLORA Benth., fruticosa vel paene herbacea glabriuscula; ramis plus minusve flexuosis gracilibus teretibus, internodiis quam folia saepius longioribus; foliis oppositis membranaceis ovatis vel rhomboideis graciliter petiolatis acuminatis serratis 3-nerviis 5–6 cm. longis, petiolo ca. 1 cm. longo; foliis superioribus lanceolati-oblongis integris; panicula pyramidali oppositiramea, ramis patentissimis basi nudis prope apicem capituliferis puberulis; capitulis congestis 4–5-floris cylindricis; involucri squamis oblongo-linearibus 2.5 mm. longis glabriusculis apice subobtusis eroso-ciliatis; corollis valde exsertis 2.5 mm. longis, tubo gracili glanduloso-puberulo, faucibus campanulato-ampliatis glabris vel obsolete granulatis, dentibus limbi 5 anguste oblongis revolutis acutis; achaeniis glaberrimis 1.6 mm. longis nigris lucidis summo disco annulari coronatis. — Bot. Sulph. 110 (1845); Jameson, Syn. Pl. Aequat. ii. 75 (1865). — ECUADOR: Insula Puna prope Guayaquil, 1841, *Hinds*, n. 401 (hb. Kew.); in terra pingui agrorum fruticiferorum Insulae Punae 1–2 m. alta floribus albis, Sept. 1838, *Barclay*, nn. 412, 2426 (hb. Brit. Mus.); reg. trop., *Sodiro*, n. 3/4 (hb. Berol.). Specimen dubium ex herb. Thibaudii verosimiliter a Néeo lectum sed sine ullo indicio loci in hb. DC. invenitur.

NOTA. — Cl. Benthamius asseveravit in descriptione principali hujus speciei "antherae apice appendiculatae," sed dissectio a cl. Brittenio in herbario Musei Britannici benevolente permissa et ab auctore maxima cum cura facta flosculorum e specimine Barclayano antheras sine ulla dubitatione inappendiculatas exhibuit.

14. **P. peruviana** (Gmel.), n. comb., fruticosa 2–4 m. alta oppositiramea subglabra; foliis oppositis tenuibus rhomboideo-lanceolatis attenuatis inferioribus grosse arguteque serratis basi cuneatis 3-nerviis supra viridibus glaberrimis subtus vix pallidioribus in nerviis puberulis 6–10 cm. longis, petiolo 1.5 cm. longo, foliis superioribus multo minoribus vix serratis vel etiam integerrimis; panicula ramosissima pyramidali, ramis ascendentibus foliosis; capitulis parvis sessilibus basi unibracteolatis; bracteolis margine pubescentibus; involucri squamis 4 aequalibus anguste oblongis obtusis ciliatis basi calloso-incrassatis; flosculis saepius 4. — *Flaveria peruviana* [Juss.] Gmel. Syst. ii. 1269 (1791). *F.* sp. *Peruviana a Dombeyo data* Juss. Gen. 187 (1789). *F. spicata* J. E. Sm. in Rees, Cycl. xiv. n. 2 (1810). *Piqueria artemisioides* HBK. Nov.

Gen. et Spec. iv. 153 (1820); DC. Prod. v. 105 (1836); Loud. Hort. Brit. 337 (1830) ubi errore dicitur originem mexicanam habere. — PERU: Lima, *Dombey* (hb. Par., hb. Berol.); Lima et Peruvia septentrionali, *Cuming*, n. 1037 (hb. Kew.); *Mathews*, n. 413 (hb. Gray); *Besser* (hb. Berol.); *Wilkes* (hb. Gray); *Weberbauer*, nn. 8, 8a, 39, et 200 (hb. Berol.). ECUADOR: Alampi, *Humboldt et Bonpland*, n. 3229 (hb. Par.); in montibus Andium prope Alausi, Huataxi, etc., in fruticetis frequens, *Spruce*, n. 5965 (hb. Kew., hb. Par., hb. Vindob., hb. Gray), "floribus albis suaveolentibus."

15. **P. Hartwegi**, n. sp. fruticosa 9–12 dm. alta; ramis flexuosis teretibus juventate puberulis deinde glaberrimis a cortice griseo tectis; foliis oppositis saepius fasciculatis linearibus glabris obsolete crenulato-serratis subtus pallidioribus 4–5.5 cm. longis 4 mm. latis uninerviis et mediocriter reticulato-venulosis; capitulis numerosissimis 4-floris in panicula elongata ramosissima racemose dispositis, lateralibus breviter sed distincte pedicellatis, terminalibus plus minusve glomeratis sessilibus; corollis 1.7 mm. longis albis, tubo proprio puberulo fauces campanulato-ampliatos subaequanti, dentibus recurvis; styli ramis longe exsertis apice mediocriter incrassatis; achaeniis immaturis. — *P. artemisioides* Benth. Pl. Hartw. 136 (1844), non HBK. — PERU: El Catamayo, *Hartweg*, n. 762 (hb. Kew., hb. Par., hb. Vindob., hb. Berol.).

Subg. IV. PHALACRAEA Benth. et Hook. f. Capitula 15–∞ flora-corymbosa, involucro campanulato, squamis 7–∞. Corolla externe glanduloso-punctata, glandulis parvis rubescentibus brevissime stipitatis, tubo proprio brevi, faucibus campanulatis vel cylindricis quam dentes limbi longioribus. — Gen. ii. 238 (1873); Hoffm. in Engl. et Prantl, Nat. Pflanzenf. iv. Ab. 5, 133 (1895). *Phalacraea* DC. Prod. v. 105 (1838); Deless. Ic. iv. 3, t. 8 (1839); Regel, Gartenfl. iii. 388, t. 107 (1854). — Species andinae herbaceae vel suffruticentes pubescentes. Folia opposita ovata petiolata. Habitus *Agerati*.

Clavis specierum.

a. Corollae fauces campanulati. *b.*
  b. Achaenia glabra basi valde obliqua sigmoidea. . . . . 16. *P. Sodiroi.*
  b. Achaenia in costis sursum hispidula basi parum obliqua. 17. *P. callitricha.*

a. Corollae fauces cylindrici. *c.*
  c. Capitula ca. 18-flora. Involucri squamae ovatae obtusiusculae. 18. *P. latifolia.*
  c. Capitula ca. 100-flora. Involucri squamae lineari-lanceolatae, acuminatissimae. . . . . 19. *P. coelestina.*

16. P. Sodiroi Hieron., herbacea tenuis decumbens basi repens; caule flexuoso oppositirameo omnifariam hirsutulo, internodiis elongatis quam folia multo longioribus; foliis oppositis parvis 1–1.4 cm. longis deltoideo-ovatis crenato-serratis; capitulis paucis graciliter pedicellatis subglobosis ca. 38-floris; corollis externe glandulis rubris sparsissimis munitis, tubo proprio brevissimo basi pilis multicellularibus valde recurvatis vel reflexis hirsuto, faucibus campanulatis; achaeniis glaberrimis obovoideis basi valde obliquis. — Hieron. in Engl. Bot. Jahrb. xxix. 3 (1900). — Ecuador: Sarsarango, *Seemann* n. 705 (hb. Kew., hb. Gray); in umbrosis humidis juxta Quito, alt. 3000 m., floret Junio et Julio, *Jameson*, n. 205 (hb. Kew.), n. 307 (hb. Kew., hb. Par.) n. 760 (hb. Brit. Mus.); fruticetis superioribus regionis silvestris in declivitatibus occidentalibus Andium circa Mihnir, prov. Cuenca, alt. 2800–3300 m., floret in Oct., *Lehmann*, n. 5187 (hb. Berol.); inter virgulta in regione interandina, *Sodiro*, n. B/1 (hb. Berol.); Chilliquin, *Mathews*, n. 1401 (hb. Kew., hb. Brit. Mus.). Peru: Prov. Chachapoyas (hb. Kew.).

17. **P. callitricha**, n. sp., herbacea decumbens vel procumbens ramosa; caule elongato quadrangulari atropurpureo glabriusculo foliato; ramis ascendentibus; foliis oppositis ovato-deltoideis 3(–5)-nerviis petiolatis acutiusculis sed apice vero obtusis grosse crenato-dentatis 1–4 cm. longis 0.7–3 cm. latis supra atroviridibus pilis albis basi incrassatis scabriusculis subtus vix pallidioribus in nerviis venisque pubescentibus margine pilis conspicue septatis eleganter ciliatis; capitulis laxe cymoso-paniculatis graciliter pedicellatis ca. 15-floris; involucri squamis ca. 13 oblanceolatis acutiusculis carinatis in margine et carina ciliatis; corollis externe glanduloso-puberulis, tubo proprio brevissimo, faucibus campanulatis quam dentes limbi longioribus; achaeniis 5-angulatis obovoideo-prismaticis disco annulari coronatis basi subrectis. — Colombia: in summo monte Quendin, Maio 1846, *Purdie* (hb. Kew., hb. Gray); inter Boquia et Volconcito, *Holton* (hb. Gray).

18. P. latifolia (DC.) Gardn., herbacea perennis; caulibus decumbentibus subsimplicibus vel paucirameis foliatis omnifariam puberulis; foliis oppositis ovatis acutiusculis crenato-serratis trinerviis utrinque viridibus subtus in nerviis pubescentibus; inflorescentia cymoso-corymbosa trichotoma paucicapitata; capitulis ca. 18-floris; involucri campanulati squamis ca. 7 ovatis obtusiusculis 3-nerviis dorso glanduloso-puberulis; corollis externe glanduliferis, faucibus cylindricis tubo proprio multo longioribus, dentibus limbi brevibus patentibus; achaeniis obovoideis 5-angulatis basi attenuatis subrectis summo disco annulari coronatis costis sursum hispidulis. — Gardn. in Hook. Lond. Jour. Bot. vi. 430 (1847); Nicholson, Dict. Gard. iii. 148 (1886) pro

parte. *Phalacraea latifolia* DC. Prod. v. 106 (1836); Deless. Ic. iv. 3, t. 8 (excl. syn. *Ageratum latifolium* Cav.); Regel, Gartenfl. iii. 388. — PERU: prope Lima, *Née* (hb. DC.), *Haenke;* Cuzco, *Gay* (hb. Gray).

Var. **glabra** (DC.), n. comb., caule glabro; foliis paullo majoribus ovatis cordatis ad 7 cm. longis; pedicellis vix apice puberulis. — *Phalacraea latifolia β glabra* DC. Prod. v. 106 (1836). — PERU? *Née* (hb. DC.).

19. P. COELESTINA (Regel) Hieron., suffruticosa ramosissima 1 m. alta pubescens; foliis oppositis ovatis subcordatis crenato-dentatis; capitulis in cymis saepius 5-capitulatis longe pedunculatis dispositis ca. 100-floris; involucri squamis numerosis lineari-lanceolatis subtriseriatis acutissimis; corollis externe in tubo proprio glanduloso-puberulis, faucibus cylindricis quam dentes limbi longioribus. — Hieron. in Engl. Bot. Jahrb. xxix. 3 (1900). *Phalacraea coelestina* Regel, Gartenfl. iii. 388, t. 107 (1854). *P. latifolia* Nicholson, Dict. Gard. iii. 148 (1886) pro parte. — PERU: casualiter in terra cum speciebus orchidaceis et bromeliaceis a Warscewiczio lectis in horticulturam europaeam introducta. Species inquirenda ut videtur ab herbariis absens.

Species excludendae.

P. ageratoides (HBK.) Gardn. in Hook. Lond. Jour. Bot. vi. 430 (1847) est *Alomia ageratoides* HBK.

P. angustata Gardn. l. c. 432 est *Alomia angustata* Benth.

P. attenuata Gardn. l. c. 430 est *Gymnocoronis spilanthoides* DC.

P. cinerea Gardn. l. c. 422 est *Alomia cinerea* Benth.

P. eupatorioides Gardn. l. c. 431 est *Trichogonia salviaefolia* Gardn. var. *β calva* Baker.

P. Eupatorium Gardn. l. c. 430 est *Clibadium rotundifolium* DC.

P. fastigiata Gardn. l. c. 431 est *Alomia fastigiata* Benth.

P. foliosa Gardn. l. c. 432 est *Alomia foliosa* Benth. et Hook. f.

P. latifolia Gardn. l. c. 430 est *Ageratum conyzoides* L.

P. longipetiolata Sch. Bip. ex. Bak. in Mart. Fl. Bras. vi. pt. 2, 183 (1876) est *Gymnocoronis spilanthoides* DC.

P. myriadenia Sch. Bip. l. c. 192 est *Alomia myriadenia* (Sch. Bip.) Bak.

P. polyphylla Sch. Bip. l. c. 191 est *Alomia polyphylla* (Sch. Bip.) Bak.

P. subcordata Gardn. l. c. 430 est *Gymnocoronis spilanthoides* DC.

II. Revision of the Genus Ophryosporus.

Ophryosporus is a natural but not sharply delimitable group of South American *Eupatorieae Piquerinae*. It differs from *Piqueria* in the presence of a well developed barbellate or shortly plumose pappus of numerous capillary or rarely slightly thickened bristles. From *Eupatorium* it differs in the entire absence of the apical appendage of the anthers and usually may be distinguished furthermore by its subsimple involucre and rather conspicuously enlarged tips of the style branches. The boundary between the two genera has been variously drawn and must be regarded at best as a somewhat artificial line. To the writer it appears that if the genus *Ophryosporus* is to be maintained at all it must be restricted to those species in which the anthers are really destitute of any terminal appendage or trace of such a structure in any perceptible broadening or thickening of the connective at its summit. Close examination shows such rudimentary appendages in several species which recent authors have referred to *Ophryosporus*, plants which furthermore exhibit at least in some instances the more imbricated involucre and less enlarged style tips usual in *Eupatorium*. If these species were kept in *Ophryosporus* there would appear to be no single valid character and no combination of characters by which the two genera could be clearly divided. For this reason it seems best to refer these plants again to *Eupatorium*. *Ophryosporus* may be divided into two sections (scarcely of subgeneric rank) on the nature of the inflorescence and arrangement of the leaves. The typical section is Chilian, while the other and larger section has a wider distribution, occurring in Brazil, Argentina, Chili, Peru, Bolivia, and Ecuador. Most of the species of Brazil and Argentina are, so far as yet known, rather local. Those of the Andes, on the other hand, in some cases have a considerable north and south range. The writer has been able to examine the types or authentic specimens of all the species and varieties of the genus as here treated.

OPHRYOSPORUS Meyen. (Nomen ab ὀφρύς, *supercilium*, et σπορά, *semen*, derivatum, achaeniis in costis saepissime ciliatis.) — Capitula homogama parva numerosa paniculata vel thyrsoidea 3–12-flora plus minusve pedicellata; involucri anguste campanulati vel cylindrici, squamis subaequalibus 1–2-seriatim laxe vel vix imbricatis, disco nudo parvo leviter convexo. Corollae albae tubulosae sursum gradatim ampliatae vel in fauces distinctos dilatatae externe praesertim in tubo proprio et sub apicibus dentium glanduloso-puberulae vel atomiferae; limbi dentibus 5 brevibus triangulares patentibus. Filamenta gracilia glabra.

Antherae oblongae apice rotundatae vel truncatae vel retusae, connectivo angusto apice nullo modo expanso nec appendiculato. Achaenia 5-angulata prismatica vel saepius leviter deorsum angustata 5-costata saepius praesertim in costis hispidula vel glanduloso-ciliolata inter costis saepe glanduloso-puberula vel atomifera. Pappi setae 15–35 albae vel roseae barbellatae vel breviter plumosae quam corolla vix breviores. — Reise um die Erde, i. 402 (1834); DC. Prod. vii. 260 (1838); Walp. in Meyen, Beitr. zur Botan. 256 (1843); Benth. et Hook. f. Gen. ii. 239 (1873); Bak. in Mart. Fl. Bras. vi. pt. 2, 186 (1876) excl. spec. n. 1; Griseb. Abhandl. Gesellsch. Wiss. Goett. xxiv. 173 (1879); Hoffm. in Engl. et Prantl, Nat. Pflanzenf. iv. Ab. 5, 133 (1890); Löfgren, Commissão Geograph. e Geolog. de São Paulo, Boletim, xii. 139 (1897); Hieron. in Engl. Bot. Jahrb. xxii. 705 (1897); Reiche, Fl. de Chil. iii. 258 (1902). *Nothites* DC. Prod. v. 186 (1836) solum quoad spec. n. 5. *Pachychaeta* Sch. Bip. ex Bak. in Mart. Fl. Bras. vi. pt. 2, 186 (1876). — Frutices ramosi, foliis oppositis vel alternis saepius petiolatis rarius sessilibus triangulari-rhomboideis vel ovato-lanceolatis vel rarius linearibus dentatis vel serratis vel crenatis vel rarius integris.

Species 17 Americae australis incolae. Species aliae plurimae ab auctoribus adhuc relatae videntur ob involucri squamis valdius imbricatis et ob antheris plus minusve distincte (quamquam brevissime) apice appendiculatis melius ad *Eupatorium* referendae propterea quod his speciebus in *Ophryosporo* inclusis distinctio inter generibus omnino evanesceret.

Clavis sectionum.

Folia alterna parva, internodiis brevissimis. Panicula thyrsoidea.
Sect. I. EUOPHRYOSPORUS.

Folia opposita majora, internodiis bene evolutis. Capitula in paniculis amplioribus vel in cymis axillaribus disposita. . . . Sect. II. OPHRYOCHAETA.

Sect. I. EUOPHRYOSPORUS, sect. nov. Capitula 5–12-flora in thyrso angusto elongato folioso-bracteato disposita. Folia parva alterna triangulari-rhomboidea vel lanceolato-linearia saepius fasciculata, internodiis brevissimis.

Clavis specierum.

Capitula ca. 5-flora. Folia lanceolati-oblonga vel linearia subglabra.
1. *O. paradoxus.*

Capitula 7–12-flora. Folia rhomboidea vel anguste deltoidea tomentella.
2. *O. triangularis.*

1. O. PARADOXUS (Hook. et Arn.) Benth. et Hook. f., fruticosus ramosus glabriusculus; ramis teretibus foliosissimis erectis; foliis anguste lanceolati-oblongis vel linearibus utroque acutis 1.5–2.5 cm. longis te-

nuibus subsessilibus subglabris viridibus margine hinc inde dentibus argutis solitariis vel paucis instructis; panicula thyrsoidea ad 3 dm. longa, ramis ascendentibus foliosis subfastigiatis pluri- vel multi-capitulatis; capitulis numerosissimis 5-floris; involucri squamis oblongis apice rotundatis margine glanduloso-ciliolatis dorso sub-3-nerviis obscure glanduloso-puberulis; corollis 3.2 mm. longis, faucibus subcylindricis glabris, tubo proprio glanduloso-puberulo aequantibus; achaeniis in costis et inter costis glanduloso-puberulis; pappi setis ca. 20 subplumosis. — Gen. Pl. ii. 239 (1873) ex Hook. f. et Jacks. Ind. Kew. ii. 354 (1895). *O. triangularis* Reiche, Fl. de Chil. iii. 259 (1902), not Meyen. *Eupatorium paradoxum* Hook. et Arn. in Hook. Comp. Bot. Mag. i. 240 (1835). *Nothites baccharidea* DC. Prod. v. 187 (1836); Gay, Fl. Chil. iii. 476 (1847). *N. baccharoides* Meigen in Engl. Bot. Jahrb. xvii. 283 (1893). *Stevia polyphylla* DC. l. c. 123. *S. baccharoides* Meigen, l. c. — CHILI: in planitiebus incultis et locis saxosis prope marem vulgaris, *Gay*, n. 990 (hb. Gray); Valparaiso, *Cuming*, n. 337 (hb. Kew., hb. Brit. Mus., hb. Gray), *Bridges*, n. 52 (hb. Kew., hb. Brit. Mus., hb. Gray), *Gillies* (hb. Gray), *Bertero* (hb. Gray), *Philippi*, n. 406 (hb. Kew., hb. Brit. Mus.); Campana di Quillota, *Edmonston* (hb. Kew., hb. Gray), *Bertero*, n. 837 (hb. Gray, hb. Brit. Mus.), *Germain* (hb. Kew.).

2. O. TRIANGULARIS Meyen, fruticosus ramosus; ramis rectis vel saepius leviter arcuatis rigidiusculis foliosissmis teretibus tomentellis; foliis parvis saepe fasciculatis rhomboideis ca. 1 cm. longis crenato-dentatis vel lobulatis basi cuneatis utrinque tomentellis; thyrsis subcylindricis terminalibus 5–10 cm. longis 2–4 cm. crassis multicapitulatis; capitulis 7–12-floris; involucri squamis 6–10 aequalibus oblongis dorso enerviis tomentellis; corollis externe glanduloso-puberulis; faucibus paullo ampliatis tubo proprio longioribus. — Reise um die Erde, i. 402 (1834); Gay, Fl. Chil. iii. 481 (1847); Benth. et Hook. f. Gen. ii. 239 (1873); Phil. Cat. Pl. Vasc. Chil. 174 (1881). *Eupatorium decipiens* Hook. et Arn. in Hook. Comp. Bot. Mag. i. 240 (1835). *E. foliolosum* DC. Prod. v. 174 (1836). *Kuhnia multiramea* Turcz. Bull. Soc. Nat. Mosc. xxiv. pt. 1, 168 (1851). *E. Volckmanni* Phil. Anal. Univ. Chil. xviii. 51 (1861). *Ophryosporus foliolosus* Reiche, Fl. de Chil. iii. 259 (1902). — CHILI: in planitiebus desiccatis, Coquimbo, *Meyen*, *Gaudichaud*, *Macrae* (hb. Kew., hb. DC.), *Harvey* (hb. Gray); Vallenar, *Reed*, n. 47 (hb. Kew.); Concepcion, *Bridges*, n. 1412 (hb. Kew., hb. Brit. Mus., hb. Gray); Copiapo, *Gay* (hb. Gray); Cobija, *Gaudichaud* (hb. Gray); desertis Atacamae, *Morong*. n. 1149 (hb. Gray).

Nomen vulgatum: *rabo de zorra* (fide Gayii).

Sect. II. OPHRYOCHAETA, sect. nov. Folia opposita, internodiis bene evolutis. Capitula in paniculis amplis vel in cymis axillaribus saepius laxe disposita.

Clavis specierum.

a. Squamae involucri saltim exteriores dorso puberulae vel pubescentes. *b.*
b. Achaenia glabra. Pubescentia involucri brevissima appressa. 3. *O. Charua.*
b. Achaenia pubescentia vel glandulifera vel saltim in angulis hispidula. Pubescentia involucri squamarum laxior. *c.*
c. Inflorescentiae axillares quam folia multo breviores. 4. *O. axilliflorus.*
c. Inflorescentiae corymboso-paniculatae terminales. *d.*
d. Flosculi minimi. Corollae ca. 2 mm. longae. *e.*
e. Folia ovata haud attenuata. *f.*
f. Inflorescentia laxa, capitulis graciliter pedicellatis. 5. *O. laxiflorus.*
f. Inflorescentia densa, capitulis subsessilibus. 6. *O. Regnellii.*
e. Folia ovato-lanceolata vel lanceolata conspicue attenuata. *g.*
g. Stigmata nigrescentia. Achaenia 1.8 mm. longa. Species Brasiliae et Argentinae. . . . . 7. *O. Freyreysii.*
g. Stigmata brunnea. Achaenia 1.5 mm. longa. Species andinae et Argentinae. . . . . 8. *O. piquerioides.*
d. Flosculi majores. Corollae 3.3–5.5 mm. longae. *h.*
h. Capitula 6–11-flora. Folia 1.6–4 cm. longa. 9. *O. origanoides.*
h. Capitula 4–5-flora. Folia ca. 7 cm. longa. 10. *O. venosissimus.*
a. Squamae involucri praeter marginem saepe eroso-ciliatam glabrae. *i.*
i. Folia graciliter quamquam saepe breviter petiolata. *j.*
j. Capitula saepissime 8–10-flora; involucri squamis ca. 5 mm. longis. 11. *O. macrodon.*
j. Capitula 4–5-flora; involucri squamis 2–3.6 mm. longis. *k.*
k. Involucri squamae lanceolati-oblongae vel ellipticae. *l.*
l. Achaenia gracillima 3 mm. longa. Species Argentinae. 12. *O. Lorentzii.*
l. Achaenia crassiora 2 mm. longa. Species bolivienses. *m.*
m. Cymae axillares compositae quam folia breviores. 13. *O. Cumingii.*
m. Cymae in corymbo convexo terminali aggregatae. 14. *O. Kuntzei.*
k. Involucri squamae plus minusve obovatae apice rotundatae. *n.*
n. Folia ovata subintegra. Species ecuadorensis. 15. *O. Sodiroi.*
n. Folia lanceolata distincte serrata. Species argentinensis. 16. *O. clavulatus.*
i. Folia sessilia. . . . . 17. *O. Pachychaeta.*

3. O. CHARUA (Griseb.) Hieron., fruticosus ramosus puberulus; ramis arcuato-ascendentibus; foliis oppositis petiolatis ovato-lanceolatis tenuibus acutis subgrosse serrato-dentatis margine utrinque cum dentibus 4–5 acutis instructis basi subcuneatis 2–3 cm. longis 1–1.5 cm. latis glabriusculis, petiolo ca. 8 mm. longo minutissime puberulo; cymis compositis ad axillas superiores glomeratis ca. 4–6 cm. diametro

rotundatis multicapitulatis; pedicellis puberulis gracilibus 2–5 mm. longis; capitulis 4-floris; involucri squamis 4 appresse puberulis anguste oblongis obtusis 3 mm. longis; corollis 3 mm. longis externe glanduloso-atomifero a tubo proprio brevi gracili in fauces longiores gradatim ampliatis; styli ramis brunneis longe exsertis apice modice incrassatis; achaeniis fusco-nigris maturitate glaberrimis; pappi setis ca. 30 barbellatis 2.5 mm. longis in specimine exsiccato sordide albis. — Hieron. in Engl. Bot. Jahrb. xxii. 705 (1897). *Mikania Charua*, Griseb. Abhandl. Gesellsch. Wiss. Goett. xxiv. 174 (1879). — ARGENTINA: Prov. de Catamarca, *Schickendantz*, n. 26 (hb. Berol.).

Nomen vulgatum: *charrua*.

4. O. AXILLIFLORUS (Griseb.) Hieron., suffruticosus; caulibus flexuosis teretibus striatis pilosiusculis; foliis oppositis membranaceis ovato-lanceolatis 3-nerviis argute serratis basi cuneatis apice acuminatis pilosiusculis; cymis axillaribus quam folia multo brevioribus; capitulis 5-floris; involucri squamis oblongis 3.5 mm. longis apice rotundatis dorso molliter pubescentibus margine ciliatis; corollis (immaturis) 4 mm. longis externe in tubo proprio glanduloso-puberulis in fauces leviter ampliatis, dentibus limbi 5 deltoideis; achaeniis 2 mm. longis in costis 5 sursum hispidulis disco crassiusculo depresso-hemisphaerico coronatis; pappi setis ca. 20 sursum barbellatis. — Hieron. in Engl. Bot. Jahrb. xxii. 706 (1897). *Eupatorium axilliflorum* Griseb. Abhandl. Gesellsch. Wiss. Goett. xix. 121 (1874). — ARGENTINA: Cordoba, prope Ascochinga, *Lorentz*.

5. O. LAXIFLORUS Bak., fruticosus ramosus erectus ad 1 m. altus; caule tereti glabrato a cortice brunneo tecto; ramulis dense fulvescenti-pubescentibus, pilis crispis; foliis oppositis ovatis breviter petiolatis grosse crenato-serratis a basi subintegra 3-nerviis obtusiusculis supra viridibus scabriusculis subtus paullo pallidioribus modice pubescentibus ca. 5 cm. longis ca. 2.7 cm. latis; inflorescentia laxe paniculata ampla; bracteis ellipticis vel linearibus, ramulis pedicellisque filiformibus, his ca. 4 mm. longis saepe arcuatis vel flexuosis; capitulis ca. 5-floris, squamis involucri 4–5 obovato-oblongis vel angustioribus 2.5 mm. longis apice rotundatis eroso-ciliatis dorso pubescentibus; corollis ca. 2.3 mm. longis, tubo proprio gracile subglabro; faucibus turbinato-campanulatis externe granulatis; achaeniis obovoideis 5-costatis in costis sparse hirsutis; pappi setis ca. 16 achaenio distincte longioribus firmiusculis barbellato-plumosis. — BRASILIA: in campis, Prov. Minas Geraes prope Caldas, *Regnell*, n. III. 709 (herb. Berol.).

6. O. REGNELLII (Sch. Bip.) Bak., fruticosus erectus ramosus tomen-

toso-pubescens 1–1.3 m. altus; ramis oppositis ascendentibus rectis vel leviter arcuatis foliatis, internodiis quam folia longioribus; foliis oppositis modice firmis ovatis obtusiusculis crenato-serratis 3-nerviis basi cuneatis supra scabriusculis subtus pallidioribus praecipue in nerviis molliter tomentosis 4–5 cm. longis 2–2.5 cm. latis, serraturis utrinque ca. 7; panicula ampla 3 dm. vel ultro longa folioso-bracteata, ramis cymiferis oppositis divergentibus tomentosis, cymis rotundatis; capitulis brevissime pedicellatis 5-floris; involucri squamis 4–6 oblongis 2.5 mm. longis erosociliatis nervoso-striatis dorso tomentosis apice rotundatis; corollis ca. 2.5 mm. longis, tubo proprio gracili puberulo, faucibus gradatim ampliatis tubum longitudine vix aequantibus subglabris, dentibus limbi 5 ovato-deltoideis patentibus; achaeniis 5-angulatis praecipue in costis valde hirsutis; pappi setis ca. 20 plumoso-barbatis. — Bak. in Mart. Fl. Bras. vi. pt. 2, 188, t. 53 (1876). *Eupatorium Regnellii* Sch. Bip. Linnaea, xxii. 572 (1849), xxx. 182 (1859), nomen solum. — Brasilia: in planitiebus Prov. Minas Geraes prope Caldas, *Regnell*, n. I. 237 (hb. Berol.); prope Villam Francam, *Riedel*, n. 1018 (hb. Gray).

7. O. Freyreysii (Dallm.) Bak., fruticosus oppositirameus; caulibus teretibus juventate tomentosis maturitate glabriusculis; ramis patentibus foliatis; foliis oppositis ovato-lanceolatis vel saepius lanceolatis attenuatis basi breviter cuneatis 3-nerviis leviter sed distincte serratis cum dentibus utrinque ca. 8 instructis supra scabriusculis vel glabriusculis subtus vix pallidioribus pubescentibus 5–8.5 cm. longis 1.5–3.5 cm. latis, petiolo supra sulcato tomentello 3–7 mm. longo; capitulis ca. 5 mm. longis saepissime 5-floris; involucri squamis obovatis apice rotundatis dorso tomentosis 3 mm. longis; corollis 2.4 mm. longis externe glanduloso-puberulis, faucibus gradatim ampliatis turbinato-campanulatis tubum proprium gracilem fere aequantibus, dentibus limbi 5 brevibus patentibus; styli ramis bene exsertis nigrescentibus apice incrassatis rotundatis; achaeniis nigris 1.8 mm. longis sursum praesertim in costis hirsutulis. — Bak. in Mart. Fl. Bras. vi. pt. 2, 188 (1876), as *Freyreissii*. *Eupatorium Freyreysii* Dallm. in Thunb. Decad. Nov. Pl. Bras. n. 19, et Flora, 1821, i. 332; DC. Prod. v. 183 (1836). *E. Freyresii* DC. Prod. v. 169 (1836) in syn. *E. Freyreissii* Bak. in Mart. Fl. Bras. vi. pt. 2, 188 (1876) in syn. *E. Freyreysi* Hook. f. & Jacks. Ind. Kew. i. 917 (1893). *E. Riedelianum* Gardn. in Hook. Lond. Jour. Bot. v. 478 (1846). *Mikania clavellata* DC. Prod. v. 192 (1836). — Brasilia: Prov. Minas Geraes, *Freyreiss* (hb. Thunb.) fide Bakeri; in silvis Serro Frio, *Gardner*, n. 4851 (hb. Kew.); prope Marianna, *Vauthier*, n. 287 (hb. Kew., hb. Gray), *Gardner*, n. 4852 (hb. Kew., hb. DC.), sub hoc numero etiam *Symphyopappus polystachyus* (DC.) Bak. fide Bak. l. c. 368; prope Rio Janeiro et Ouro Preto,

Glaziou, n. 15,158 (hb. Kew.); *Riedel* (hb. Kew.); *Schuch*, n. 138 (hb. Vindob.).

8. O. PIQUERIOIDES (DC.) Benth., fruticosus erectus vel subscandens oppositirameus foliis et floribus precedenti simillimus; ramis juventate fulvescenti-tomentellis maturitate glabratis striatulis; foliis lanceolatis 3-nerviis serratis vel integerrimis breviter petiolatis 4–9 cm. longis, 1.2–3.3 cm. latis supra scabriusculis subtus in nerviis tomentosis vel pubescentibus; paniculis patente ramosissimis; capitulis numerosissimis 5–7-floris; involucri squamis oblongis vel elliptici-obovatis apice rotundatis erosis dorso laxe pubescentibus; corollis lutescenti- vel viridescenti-albis; styli ramis apice brevissime et modice incrassatis brunneis; achaeniis nigris 5-angulatis ca. 1.5 mm. longis pubescentibus. — Benth. ex Bak. in Mart. Fl. Bras. vi. pt. 2, 188 (1876). *Eupatorium piquerioides* DC. Prod. v. 175 (1836). *E. Tweedianum* Griseb. Abhandl. Gesellsch. Wiss. Goett. xxiv. 170 (1879), partim, non Hook. et Arn. *Mikania Mandonii* Sch. Bip. Linnaea, xxxiv. 536 (1865–6). *M. Mandoni* Bak. l. c. *Ophryosporus saltensis* Hieron. in Engl. Bot. Jahrb. xxii. 705 (1897). — PERUVIA: in montibus Guanoccensibus, *Haenke* (hb. DC.); Panahuanca, *Mathews*, n. 1122 (hb. Kew.); inter Palcam et Huacapistanam, Prov. Tarma, alt. 1700–2400 m., *Weberbauer*, n. 1776 (hb. Berol.). BOLIVIA: Yungas, *d'Orbigny*, n. 421 (hb. Vindob., hb. Gray); prope Soratam, Prov. Larecaja, regione temperata, alt. 2550 m., ad rivum in nemoribus, *Mandon*, n. 268 (hb. Kew., hb. Brit. Mus., hb. Gray); *Mandon*, n. 255 (hb. Kew., hb. Brit. Mus.); Calapampa, *Bang*, n. 2342 (hb. Gray), distrib. sub nomine "Willoughbya sp. n." CHILI: Santa Cruz, Aug. 1865, *Pearce*, (hb. Kew., hb. Brit. Mus.). ARGENTINA: Salta prope Yacone, *Lorentz et Hieronymus*, n. 536 (hb. Berol.).

NOTA. — *O. saltensis* Hieron. l. c. est forma ut videtur vix distincta foliis firmiusculis saepe conduplicatis verosimiliter e loco aridiori.

9. O. ORIGANOIDES (Meyen et Walp.) Hieron., suffruticosus oppositirameus; caulibus teretibus striatulis; foliis oppositis ovatis vel ellipticolanceolatis acutis vel acuminatis haud longe attenuatis 1.5–3 cm. longis 8–10 mm. latis 3-nerviis petiolo 4–6 mm. longo gracili et nerviis tomentellis margine utrinque cum dentibus saepissime 4–7 instructis; involucri squamis uniseriatis 8–10 lanceolati-oblongis acutiusculis saltim juventate dorso pubescentibus; capitulis in corymbo composito dispositis 9–11-floris; corollis 5.5 mm. longis; achaeniis nigrescentibus 3.5 mm. longis. — Hieron. in Engl. Bot. Jahrb. xxii. 707 (1897), excl. pl. Rusbyi et syn. *Eupatorium eleutherantherum*. *E. origanoides* Meyen et Walp. Nov. Act. Acad. Caes.-Leopold. xix. Suppl. I. 257 (1843);

Walp. Rep. vi. 113 (1846); non HBK. — PERUVIA: in planitie circa Tacoram, alt. 4300–5200 m., *Meyen* (hb. Berol.).

NOTA. — *Eupatorium eleutherantherum* Rusby, Mem. Torr. Bot. Club, iii. pt. 3, 53 (1893), huc a cl. Hieronymo relatum exhibet antheras plus minusve appendiculatas saltim connectivo apice expanso, etiam folia longiora magis apice attenuata cum dentibus numerosioribus (7–11) utrinque instructa. Quapropter planta Rusbyi videtur verosimiliter distincta et melius ad *Eupatorium* referenda.

Var. (?) MICROCEPHALUS Hieron., habitu formae typicae similis; foliis magis attenuatis; capitulis minoribus 6–7-floris, squamis involucri obovalibus apice rotundatis ciliatis dorso laxe pubescentibus; corollis 4 mm. longis; achaeniis (immaturis) 2–2.5 mm. longis. — Hieron. in Engl. Bot. Jahrb. xxii. 708 (1897). — BOLIVIA: prope Cochabambam, ca. 4000 m. alt., *Kuntze* (hb. Berol.).

10. O. VENOSISSIMUS (Rusby) Robinson, fruticosus oppositirameus; ramis subangulatis ascendentibus foliatis; foliis oppositis lanceolatis ca. 7 cm. longis ca. 2 cm. latis serratis 3-nerviis attenuatis basi cuneatis utrinque viridibus sparse pubescentibus; corymbis rotundatis folioso-bracteatis; capitulis numerosis brevissime pedicellatis vel subsessilibus; involucri pallide viridis subcylindrici squamis anguste oblongis acutiusculis dorso rotundatis sparse laxeque pilosis ca. 3 mm. longis; flosculis 4–5; corollis albis vel ochroleucis 3–4 mm. longis, tubo proprio glanduloso-puberulo quam fauces glabri cylindrici breviori; achaeniis valde immaturis pubescentibus; pappi setis ca. 28 barbellatis tenuibus albis. — Proc. Am. Acad. xli. 271 (1905). *Eupatorium venosissimum*, Rusby, Mem. Torr. Bot. Club, vi. 57 (1896). — BOLIVIA: prope Cochabambam, *Bang*, n. 1113 (hb. Gray).

11. O. MACRODON Griseb., frutescens in parte superiori oppositirameus; ramis subteretibus dense fulvo-puberulis; foliis oppositis ovatis magnis grosse et duplice dentato-serratis acutis basi subrotundatis vel cuneatis membranaceis 3–5-nerviis ad 14 cm. longis ad 7 cm. latis supra scabris subtus pallidioribus pubescentibus, petiolo ca. 1.3 cm. longo; inflorescentiis terminalibus corymbosis convexis subcongestis; capitulis saepissime 8–10-floris pro genere maximis; flosculis (styli ramis elongatis exclusis) ca. 7 mm. longis; corollis ca. 5 mm. longis, tubo proprio puberulo quam fauces cylindrici glabri multo breviori. — Abhandl. Gesellsch. Wiss. Goett. xxiv. 173 (1879). — ARGENTINA: Nevado del Castillo, Prov. de Salta, *Lorentz et Hieronymus*, n. 156 (hb. Berol.).

12. O. LORENTZII Hieron., fruticosus oppositirameus 1.5–2 m. altus; ramis teretibus flexuosis ascendenti-patentibus striatulis; foliis oppositis ovato-lanceolatis attenuati-acuminatis argute serratis ca. 5–10 cm. longis 2–4 cm. latis membranaceis 3-nerviis petiolatis juventate utrinque sparse pubescentibus deinde glabratis; corymbis numerosis

lateralibus in axillis superioribus et terminalibus rotundatis quam folia brevioribus; capitulis 4-floris; involucri squamis 4 aequalibus linearibus acutiusculis 4 mm. longis; corollis 3.3 mm. longis fere a basi gradatim ampliatis in parte inferiori glanduloso-puberulis, dentibus limbi brevissimis erectis deltoideis; achaeniis in parte inferiori glabris in parte superiori sparse hispidulis; pappi setis ca. 23 albidis subplumosis 3 mm. longis. — Hieron. in Engl. Bot. Jahrb. xxii. 706 (1897). *Eupatorium laeve* Griseb. Abhandl. Gesellsch. Wiss. Goett. xxiv. 172 (1879), partim f. Hieron. l. c. — ARGENTINA: Cueste inter Yacone et Los Potreros, *Lorentz et Hieronymus*, nn. 333, 340 (hb. Berol.).

13. O. CUMINGII (Sch. Bip.) Benth., fruticosus glabriusculus; ramis flexuosis elongatis subteretibus laevibus striatulis medullosis, internodiis 5–12 cm. longis, ramulis gracillimis puberulis; foliis oppositis tenuibus lanceolatis longissime attenuatis acutissimis 3-nerviis argute serratis 3–10 cm. longis 7–20 mm. latis sparse in nerviis venulisque puberulis vel supra glaberrimis, petiolo 4–12 mm. longo gracili; cymis axillaribus quam folia subtendentia multo brevioribus in parti superiori caulium et ramorum aggregatis et paniculam foliosam formantibus, pedicellis filiformibus 1–3 mm. longis; capitulis 4-floris ca. 6 mm. altis; involucri squamis oblongis tenuibus stramineo-viridibus ciliolatis 3–4 mm. longis apice rotundatis dorso 2–3-nerviis; corollis albis 3.3 mm. longis, tubo proprio gracili externe glanduloso-puberulo fauces cylindrico-campanulatos sparsissime glanduliferos subaequanti, dentibus limbi 5 ovato-deltoideis plus minusve patentibus; achaeniis 5-angulatis 1.6 mm. longis prismaticis modice deorsum angustatis in costis sursum hispidis inter costis glaberrimis summa parte cupulo brevissimo coronatis; pappi setis capillaribus barbellatis. — Benth. ex Bak. in Mart. Fl. Bras. vi. pt. 2, 188 (1876); Hieron. in Engl. Bot. Jahrb. xxii. 705 (1897). *Mikania Cumingii* Sch. Bip. Bull. Soc. Bot. Fr. xii. 82 (1865) et Linnaea, xxxiv. 535 (1865–6), nomen nudum. — BOLIVIA: in nemoribus regionis temperatae 2700–2900 m. alt., inter Ladrilloni et Condurpata, Prov. Larecaja, *Mandon*, n. 264 (hb. Kew., hb. Gray); *Bridges*, 1847 (hb. Brit. Mus.); *Cuming*, n. 102 (f. Sch. Bip.).

14. O. KUNTZEI Hieron., fruticosus oppositirameus; ramis gracilibus patenti-ascendentibus juventate puberulis deinde glabratis usque ad inflorescentias terminales corymbosas foliatis; foliis oppositis lanceolatis vel ovato-lanceolatis acuminato-attenuatis serratis 3–7 cm. longis 1–2 cm. latis 3–5-nerviis utrinque sparse pubescentibus; corymbis multicapitulatis valde convexis, pedicellis ca. 1 mm. longis; capitulis 4-floris; squamis involucri 4 subaequalibus 2.6–3.3 mm. longis fere a basi gradatim expansis in parte inferiori glanduloso-puberulis; achaeniis nigris 5-angulatis cum vel absque angulis secondariis obscuris

2 mm. longis deorsum valde angustatis apice ab annulo albido coronatis; setis pappi ca. 25 sordido-albis. — Hieron. in Engl. Bot. Jahrb. xxii. 707 (1897). — BOLIVIA: Tunari australi, ca. 3000 m. alt., Apr. – Maio, 1892, *Kuntze* (hb. Berol.).

15. O. SODIROI Hieron., fruticosus verosimiliter scandens; ramis oppositis elongatis flexuosis puberulis, internodiis folia longitudine valde superantibus; foliis ovatis acutis petiolatis integris vel pauciserratis 3–4 cm. longis 1.7–2 cm. latis 3-nerviis tenuibus pellucide reticulato-venosis; capitulis sublaxe paniculatis 5–7-floris; pedicellis patentibus 2–3 mm. longis; involucri squamis 5–7 obovatis vel late spatulatis brunneis ciliatis apice rotundatis erosis dorso glabris ca. 2.8 mm. longis; corollis gradatim et modice apicem versus ampliatis ubique glanduloso-puberulis vel atomiferis; achaeniis (valde immaturis) brevissimis in angulis scabratis; pappi setis ca. 28 albidis inaequalibus barbellatis. — Hieron. in Engl. Bot. Jahrb. xxix. 3 (1900). — ECUADOR: in silvis subtropicis prope La Chima, *Sodiro*, n. 6/18 (hb. Berol.); Campamento Utañag in valle fluminis Chambo, alt. 3045 m., *Strübel*, n. 275 (hb. Berol.).

16. O. CLAVULATUS Griseb., fruticosus 2 m. altus superne puberulus laxe ramosus; ramis teretibus foliatis oppositis; foliis anguste ovato-lanceolatis longe acuminato-attenuatis 3-nerviis tenuibus serratis supra obscure puberulis subtus in nerviis pubescentibus 4–6 cm. longis 1.3–2.5 cm. latis; petiolis 6–11 mm. longis flexuosis planiusculis; paniculis ovalibus multicapitulatis, capitulis 4–5-floris; involucri squamis obovati-oblongis 2 mm. longis ciliolatis dorso glabris brunneis; corollis 2 mm. longis, tubo proprio gracili puberulo sursum in fauces subaequilongos gradatim expanso; achaeniis nigris 1.6 mm. longis 5-angulatis in angulis sursum hispidulis; pappi setis ca. 20 albidis subplumoso-barbatis. — Abhandl. Gesellsch. Wiss. Goett. xxiv. 173 (1879); Hieron. in Engl. Bot. Jahrb. xxii. 705 (1897). *Eupatorium clavulatum* Griseb. l. c. xix. 120 (1874). — ARGENTINA: Cuesta de Periquilla, *Lorentz*, n. 409; *Lorentz et Hieronymus*, n. 178 (hb. Berol.).

17. O. PACHYCHAETA Bak., suffruticosus erectus ramosus puberulus; ramulis angulatis viridibus foliatis flexuosis; foliis oppositis sessilibus lanceolatis firmiusculis 3-nerviis utrinque viridibus punctatis subglabris 2–3 cm. longis 4–7 mm. latis utrinque 1–3-angulato-dentatis acutis; corymbis terminalibus pyramidatis alternirameis 4–5 cm. diametro, bracteis subulatis brevissimis, ramis puberulis apicem versus 3–7-capituliferis; capitulis saepissime 4-floris; involucri squamis 3–5 oblongis vel anguste obovatis vel ellipticis acutiusculis 2.5 mm. longis; corollis glabriusculis 2.5 mm. longis, tubo proprio gracillimo fauces campanulatos subaequanti; achaeniis 1.2 mm. longis basin versus

attenuatis 5-angulatis fere glabris ; pappi setis aequalibus crassiusculis haud barbatis salmoneis vel roseis attenuatis subpatentibus. — Bak. in Mart. Fl. Bras. vi. pt. 2, 187 (1876). *Pachychaeta eupatorioides* Sch. Bip. mss. fide Bak. l. c. — BRASILIA : in planitiebus Prov. Minas Geraes, *Lund ; Claussen* (hb. Kew.) ; *Riedel*, n. 421 ; Rio Janeiro, *Glaziou*, n. 14,018 (hb. Kew., hb. Berol.), n. 14,019 (hb. Kew.).

Species reducendae vel excludendae.

O. Burchellii Bak. in Mart. Fl. Bras. vi. pt. 2, 187 (1876) est forma *Eupatorii tetranthii* Sch. Bip. quod videtur solum forma oppositifolia *E. dentati* Gardn.

O. Chilca (HBK.) Hieron. in Engl. Bot. Jahrb. xxii. 706 (1897) ob antheris distincte appendiculatis certe ex *Ophryosporo* excludendus est *E. Chilca* HBK.

O. Mandonii (Sch. Bip.) Benth. et Hook. f. ex Hook. f. et Jacks. Ind. Kew. ii. 354 (1895) est *O. piquerioides* (DC.) Benth.

O. ovatifolius (DC.) Benth. et Hook. f. ex Hemsl. Biol. Cent.-Am. Bot. ii. 79 (1881), ob antheris obscure appendiculatis et ob affinitate indubia cum aliis speciebus *Eupatorii* melius nunc ad hoc genus referendus, est vere ab *E. polybotryo* DC. Prod. v. 174 (1836) nullo modo distinctus.

O. solidaginoides (HBK.) Hieron. in Engl. Bot. Jahrb. xxix. 4 (1900) est eisdem rationibus *E. solidaginoides* HBK.

O. solidaginoides, var. *Bonplandianus* (Sch. Bip.) Hieron. l. c. = *Eupatorium solidaginoides*, var. **Bonplandianum** (Sch. Bip.), n. comb.

III. THE GENUS HELOGYNE AND ITS SYNONYMS.

Since its publication by Nuttall in 1841 the genus *Helogyne* has remained an obscure monotype known only from a single fragmentary specimen, collected in Peru and now preserved in the herbarium of the British Museum. The genus has been referred to the *Piquerinae* by all recent authors who have had occasion to classify it, but Bentham and Hooker, who first expressed this view as to its affinities, particularly state that they did not examine the anthers, which alone furnish the crucial character of the subtribe.

While at the herbarium of the British Museum, the author was kindly permitted to remove one of the very few flowers from a head and make a dissection. The anthers were found to be each supplied with a well-developed terminal appendage, showing clearly that the genus belongs not to the *Piquerinae* but to the *Ageratinae*. When transferred to the latter tribe, *Helogyne* is found to occupy the same

place as the later monotypic genus *Brachyandra* Phil., and there can be no doubt that these two plants are congeneric. They are both small-leaved glandular-pubescent xerophytic shrubs, with closely similar achenes and pappus, and both possess the peculiar narrowly tubular corollas with exceedingly short teeth and no expanded throat. The only difference between them which could possibly be regarded as of generic importance is that the involucre in *Hologyne* is about 2-seriate and of subequal bracts, while in *Brachyandra* it is about 3-seriate, the outer bracts being decidedly shorter. In view of the close correspondence in floral structure, achenes, leaf-arrangement, etc., this difference in the involucre, which finds frequent parallels within the limits of several other genera of the *Compositae*, seems by no means sufficient to warrant keeping these two genera separate. The later name proposed by Philippi must of course give way to the earlier one of Nuttall.

Leto Phil. is a third obscure Chilian xerophytic monotype of this affinity. Its generic relationship to *Brachyandra* was shrewdly surmised by Dr. O. Hoffmann (see Engl. & Prantl. Nat. Pflanzen. iv. Ab. 5, 334), notwithstanding a misleading statement in the original description to the effect that the corollas were irregular, which is not the case. More recently Reiche, Fl. de Chil. iii. 263 (1902), has formally transferred the single species to *Brachyandra*. While at Berlin, the writer had an opportunity to examine an authentic specimen of this plant (*Leto tenuifolius* Phil., *Brachyandra tenuifolia* Reiche), and failed to find even specific distinctions between it and the type of *Hologyne apaloidea* preserved at the British Museum. It is true that the specimen of *Leto* at Berlin shows some leaves much more deeply lobed than any on the specimen of *Hologyne* at the British Museum, but the latter consists only of a tip of a flowering branch on which the leaves, 3-toothed at the apex, correspond well with the uppermost leaves in the Berlin plant.

Still a fourth South American xerophytic monotype clearly belongs to the same group, namely, *Addisonia* Rusby, Bull. Torr. Bot. Club, xx. 432, t. 159 (1893). Like the three preceding, it is an erect viscid much-branched shrub with small narrow alternate glandular leaves, few-flowered heads, narrow subcylindric involucre, and disk free from pales. In common with them it has 5-angled achenes, slightly narrowed toward the base, and crowned with numerous purple-tinged barbellate setae. What is still more significant, it shares with them the peculiar very narrowly tubular corollas destitute of any distinct throat and provided with the same very short suberect teeth, of the same yellowish white color and exhibiting the same tendency to external gran-

ular puberulence. Like *Brachyandra*, *Addisonia* has an involucre with 3–4-seriate scales which are strongly imbricated and very unequal in length, but unlike any of the three other monotypes here discussed, *Addisonia* has its involucral scales arranged in four upright rows. This difference, if any, must be regarded as its claim to rank as a separate genus. It is a conspicuous characteristic, and at first sight might seem to be of considerable diagnostic importance. However, a second species, closely related to *Addisonia virgata* Rusby, has been collected in Peru by Weberbauer, and in it the scales are in five not always equidistant erect series, showing that the number of the series is not of generic significance. Furthermore, the tendency of closely imbricated, somewhat carinate involucral scales to assume more or less regularity in upright series is observable elsewhere in the *Compositae* in a way to cast much doubt upon the importance of the character as a sole basis for a generic separation. Thus, in the species of *Bigelovia*, of the *B. graveolens* group, an equally marked tendency of this sort is observable, but shows such inconstancy even in very nearly related forms, that it can scarcely be taken as a character of specific, not to mention generic, significance. In view, then, of the close correspondence of the four South American plants here discussed — a likeness which embraces, as we have seen, not merely habit, leaf-arrangement, etc., but all the more significant characters of flower and fruit — it seems best to unite them under the oldest name, both in order to show their obvious relationship and to avoid the adoption of a standard of generic classification solely on the basis of involucral differences, which would cause great difficulty and artificiality if applied to neighboring genera of the *Compositae*.

Attention may be called to the fact that all four of these plants maintain the chief distinction by which the genus *Brachyandra* has long been separated from the allied genus *Trichogonia*, namely, the very narrowly tubular corolla. The creation in botanical literature of these four successive genera for plants, which now appear to be of one generic type, is readily explained and to a great extent excused by the rarity of the plants concerned and by the natural misapprehensions which have arisen from mistakes in the original descriptions. Thus, the original *Helogyne*, founded on a small tip of a flowering branch, was thought by Nuttall to be probably an annual, and his description was likely to mislead the reader into supposing that the outer involucre was more foliaceous and the style-branches more expanded than is really the case. To this may be added the circumstance that Bentham long ago referred the genus to the *Piquerinae*, with which it has no close affinity. The original description of *Leto* states that the corolla

is irregular, a trait which, if it really were true, would place the genus in the *Mutisieae*. Finally *Addisonia* is described and figured as having corollas with campanulate throats. Under these circumstances, it is by no means remarkable that the real affinity of these plants has not been noticed until authentic specimens of each of them could be studied in relation to the others. The combined genus may be treated as follows:

HELOGYNE Nutt. (Nomen ab ἦλος, *clavis*, et γυνή, *mulier*, ob forma styli ramorum incrassatorum.) — Capitula parvula homogama 6–12-flora terminalia vel subcorymbosa vel spicato-racemosa; involucro subcylindrico vel anguste campanulato, squamis 2–4-seriatis imbricatis, receptaculo parvo nudo planiusculo. Corollae anguste tubulosae vel etiam angustissime fusiformes nullo modo in fauces ullos distinctos ampliatae externe glanduloso-puberulis vel pulverulis, limbi brevissime 5-dentati dentibus suberectis vel leviter patentibus. Antherae lineares inclusae apice obtuse appendiculatae basi integrae. Styli rami valde exserti plus minusve patentes valde sed gradatim incrassati flavi vel saepius nigrescentes. Achaenia 5-costata prismatica deorsum leviter angustata. Pappi setae subaequales tenues achaeniis subaequilongae vel superantes barbellatae vel subplumosae. — Trans. Am. Phil. Soc. n. s. vii. 449 (1841); Walp. Rep. vi. 107 (1846); Benth. et Hook. f. Gen. ii. 239 (1873); Hoffm. in Engl. et Prantl. Nat. Pflanzenf. iv. Ab. 5, 133 (1890). *Brachyandra* Phil. Fl. Atac. 34, t. 4, f. D (1860); Benth. et Hook. f., l. c. 244 (1873); Hoffm. l. c. 138 (1890); Reiche, Fl. de Chil. iii. 263 (1902). *Leto* Phil. Ann. Mus. Nac. Chil. sec. 2 (botanica), 33, t. 1, f. 3 (1891); Hoffm. l. c. 334 (1893). *Addisonia* Rusby, Bull. Torr. Bot. Club, xx. 432, t. 169 (1893). — Frutices ramosissimi foliosi glanduloso-puberuli. Folia alterna parva integra vel dentata vel lobato-subpinnatifida sessilia.

Species 4 regionis desiccatae Peruviae et Boliviae australis et rei publicae Chilensis borealis incolae.

Sect. I. EUHELOGYNE, sect. nov., involucri squamis subaequalibus ca. 2-seriatim imbricatis. — *Helogyne* Nutt. l. c. *Leto* Phil. l. c. — Species unica.

1. H. APALOIDEA Nutt., ramis arcuato-ascendentibus foliosis, internodiis brevibus; foliis parvis 8–15 mm. longis cuneato-oblanceolatis integerrimis vel saepius irregulariter pinnatim 2–3-lobatis vel supremis solum apice 2–3-dentatis glanduloso-puberulis amaris; capitulis 8–12-floris paucis erectis corymbosis, pedicellis gracilibus erectis vel arcuato-ascendentibus; involucri squamis subaequalibus anguste ellipticis vel

lanceolatis ca. 6–8 apice obtusiusculis vel rotundatis ca. 6 mm. longis pubescentibus; corollis verosimiliter flavescenti- vel viridiscenti-albis 4.5 mm. longis externe minute granulosis; achaeniis 2.7 mm. longis; pappi setis ca. 20 barbellatis 2 mm. longis. — Trans. Am. Phil. Soc. n. s. vii. 449 (1841). *Leto tenuifolius* Phil. Ann. Mus. Nac. Chil. sec. 2 (botanica), 34, t. 1, f. 3 (1891). *Brachyandra tenuifolia* Reiche, Fl. de Chil. iii. 263 (1902). — PERU: Arequipa, *Curson* (hb. Brit. Mus.). — CHILI: inter Sibayam et Chiapam in provincia Tarapacá, *F. Philippi* (specimen in hb. Berol. a cl. Reicheo missum).

Sect. II. BRACHYANDRA (Phil.), sect. nov., involucri squamis valde inaequalibus spiraliter 3–4-seriatim imbricatis. — *Brachyandra* Phil. Fl. Atac. 34, t. 4, f. D (1860). — Species unica desertorum Atacamae incola.

2. **H. macrogyne** (Phil.), n. comb., fruticosa ramosissima viscoso-tomentella 1 m. alta parte inferiori delapsu foliorum denudata cortice griseo tecta; ramis ascendentibus foliosissimis furcatis prope apicem capituliferis; capitulis 6–7 mm. altis saepe 4-floris breviter pedicellatis; involucri squamis subscariosis tenuibus pubescentibus appressis exterioribus brevissimis ovatis acutis, intermediis gradatim longioribus oblongo-ovatis acutis, intimis lineari-lanceolatis; corollis albis vel ex sicco purpurascentibus 5 mm. longis ubique externe resinoso-granulosis; antheris linearibus 1.8–2 mm. longis; achaeniis nigricantibus sursum atomiferis 3 mm. longis; pappi setis ca. 25 sordide albidis vel etiam purpurascentibus breviter plumoso-barbatis 4.5 mm. longis subinaequalibus. — *Brachyandra macrogyne* Phil. Fl. Atac. 34, t. 4, f. D (1860); Reiche, Fl. de Chil. iii. 263 (1902). — CHILI: Prov. Atacama versus Tilopozo, alt. 2300 m., *Philippi;* in desertis Atacamae, *Philippi*, n. 504 (hb. Berol.), Aug. 1864, *Pearce* (hb. Kew.).

Sect. III. ADDISONIA (Rusby), sect. nov., involucri squamis valde inaequalibus in seriebus 4–5 erectis imbricatis. — *Addisonia* Rusby, l. c. — Species 2 quarum una Boliviae australis altera Peruviae australis.

3. **H. virgata** (Rusby), n. comb., fruticosa ramosissima glanduloso-subviscosa ad 1 m. alta basi delapsu foliorum denudata, ramis subfastigiatis foliosissimis saepius supra mediam partem capituliferis; foliis ascendentibus vel appressis ad 11 mm. longis ad 1.3 mm. latis glaberrimis integris glanduloso-punctatis firmiusculis linearibus sessilibus subcarinatis 1-nerviis obtusis margine revolutis; capitulis spicato-racemosis breviter pedicellatis 4–5-floris; squamis involucri erecte 4-seriatim imbricatis subherbaceis acutissimis vel obtusiusculis et

argute mucronatis; corollis ocroleucis 5.5 mm. longis externe basi et prope apicem granuliferis; antheris 2 mm. longis linearibus; achaeniis obtuse 5-angulatis deorsum leviter angustatis ubique sed praesertim in angulis granulosis; pappi setis purpureis ca. 25 paullulo rigidiusculis barbellatis ca. 5 mm. longis. — *Addisonia virgata* Rusby, Bull. Torr. Bot. Club, xx. 432, t. 169 (1893). — Bolivia: Songo, Nov. 1890, *Bang*, n. 868 (hb. Gray, hb. Acad. Philad.) sub nomine *Chuquiragua* distributa.

4. **H. Weberbaueri,** n. sp., fruticosa ad 1 m. alta ramosissima in parte inferiori delapsu foliorum denudata cortice griseo tecta, ramis subfastigiatis flexuosis erectis foliosissimis supra mediam partem capituliferis; foliis linearibus crassiusculis 1 cm. longis 2 mm. latis prope marginem hispidulis glanduloso-punctatis; capitulis spicato-racemosis breviter pedicellatis ca. 5-floris; involucri squamis in seriebus 5 erectis imbricatis valde inaequalibus fere omnino brunnescenti-stramineis nec herbaceis carinatis apice attenuatis; corollis exacte tubulosis ocroleucis apice brevissime 5-dentatis externe solum versus basin granuliferis ca. 7 mm. longis; antheris linearibus 2.5 mm. longis; achaeniis prismatico-obpyramidatis ubique praesertim in angulis granuliferis 3 mm. longis; pappi setis subinaequalibus purpurascentibus rigidiusculis barbellatis ca. 7.5 mm. longis. — Peru: in arenosis subdesertis, Yura, alt. 2400 m., 31 Aug. 1902, *Weberbauer*, n. 1416 (hb. Berol.). Species praecedenti valde affinis differt foliis latioribus margine hispidulis, capitulis majoribus, involucro haud herbaceo, corollis longioribus basi tantum granuliferis.

IV. Diagnoses and Synonymy of Eupatorieae and of certain other Compositae which have been classed with them.

Apodocephala Bak. Jour. Linn. Soc. xxi. 417 (1885); S. Ell. ibid. xxix. 28 (1891); Hoffm. in Engl. & Prantl Nat. Pflanzenf. iv. Ab. 5, 134, 135 (1890), 388 (1894). Through the courtesy of Sir William Thiselton Dyer and Dr. Stapf. of the Royal Gardens at Kew the writer was permitted to make dissections of the flowers of both species of this problematic genus of Madagascar, which has been referred to the *Eupatorieae* by Mr. Baker and to the *Vernonieae* by Dr. Hoffmann. The anthers are clearly sagittate, the leaves alternate, the style-branches rather strongly recurved and acutish, and the involucre of a form and texture far more frequent in the *Vernonieae* than in the *Eupatorieae*. Indeed, all features observed seem to confirm fully the view of Dr. Hoffmann that the genus should be referred to the former tribe.

Alomia dubia, n. sp., herbacea erecta perennis sordide pubescens 4–7 dm. alta; radice lignescenti ramosa; caulibus 1 vel pluribus teretibus striatulis foliosissimis ad inflorescentiam corymbosam simplicissimis; foliis alternis oblanceolatis obtusiusculis crenato-serratis 2–3 cm. longis 4–10 mm. latis basi attenuatis subpetiolatis utrinque dense et sordide pubescentibus supra rugulosis subtus reticulatis; corymbis laxe ramosis 7–15 cm. latis supra modice planis, ramis ascendentibus saepius 3–5-capituliferis, bracteis linearibus 5–15 mm. longis; capitulis ca. 65-floris ca. 1 cm. diametro 8–10 mm. altis; involucri campanulati squamis subbiserialibus lanceolato-linearibus subaequalibus dorso puberulis nervosis apice attenuatis tomentellis; corollis roseis 4 mm. longis, tubo proprio gracili externe glanduloso-hirsutulo basi plus minusve expanso supra in fauces turbinato-campanulatos gradatim ampliato, limbo purpurascenti-tomentello; achaeniis nigris 5-angulatis glaberrimis basi mediocriter angustatis apice rotundatis ab annulo albido cartilagineo coronatis omnino calvis. — Brazil, presumably from the Prov. Goyaz, *Dr. A. Glaziou,* n. 2 1579 (hb. Kew.).

Although there can be no doubt that this species is technically an *Alomia* and must be referred to that genus, as the genera of this affinity are now divided, it must be confessed that *Alomia* looks suspiciously like an artificial aggregate of species which may well have had a very different origin. Its species are varied in habit, and approach on the one hand so close to *Ageratum,* and on the other to *Trichogonia,* that it may well be doubted whether they are not, at least in some cases, "*formae epapposae*" of these genera. The present species closely resembles in habit and many of its features *Trichogonia.* It should be noted that forms of at least two species of *Trichogonia* have been found in which part or all the achenes were entirely destitute of pappus. The species here described, however, is clearly distinct from any hitherto characterized species of either genus. *Trichogonia* with its plumose setiform pappus is certainly very distinct from *Ageratum* with a pappus of few distinct or somewhat connate scales, yet the *Alomiae,* which are entirely destitute of pappus or have only an annular rudiment in its place, show such transitions of habit, involucre, pubescence, etc., that they neither carry conviction as a distinct genus, nor are they capable of satisfactory grouping as pappusless forms of the pappus-bearing genera. The genus *Alomia* is as yet very poorly represented in herbaria, and until further material has been collected, it seems impracticable to revise the generic limits of the three genera here concerned.

HARTWRIGHTIA FLORIDANA Gray, Proc. Am. Acad. xxiii. 265 (1888). In characterizing this monotypic genus from Florida, Dr. Gray un-

fortunately described the anthers as exappendiculate. This has led to some misapprehension as to its affinities, and it has been placed in the *Piquerinae* by Hoffmann in Engl. & Prantl, Nat. Pflanzenf. Nachtr. zu iv. Ab. 5, 321 (1897), who seems to have overlooked Professor J. M. Holzinger's notes on the subject, Bull. Torr. Bot. Club, xx. 287, t. 160 (1893). Careful dissection shows that the anthers are each provided with an ovate deeply retuse membanaceous apical appendage. This trait throws the genus into the *Ageratinae*, where it should probably be placed nearest *Alomia*, a conclusion long ago reached by Professor Holzinger.

AGERATUM SCORPIOIDEUM Bak. in Mart. Fl. Bras. vi. pt. 2, 197 (1876). Mr. Baker's description of this species was drawn from Schomburgk's no. 353 in the herbarium of the Royal Gardens at Kew. He states that the plant is an erect doubtfully perennial herb. While at the Royal Botanical Museum of Berlin, the writer had an opportunity to examine an authentic specimen of *Caelestina repens* Sch. Bip., mentioned in Schomb. Fauna et Flora Guy. 1134 (1848), which proves identical with Baker's species. Schultz's name, although earlier, cannot be taken up, as it is accompanied by no description. It was founded on Schomburgk's no. 1188, collected on a moist savanna near the Canuku Mountains, British Guiana. The specimen is more complete than the one at Kew, and shows that the plant has a horizontal, evidently perennial, and slightly lignescent rhizome, which roots at the nodes and sends up erect subsimple stems.

Stevia simulans, n. sp., herbacea perennis fere a basi pauciramea erecta; caule et ramis simplicibus teretibus purpureis foliosissimis 3–3.5 dm. altis in summa parte glanduloso-puberulis; foliis linearibus crassiusculis firmiusculis 3–5-nerviis glabris 2.8–3.5 cm. longis 2–5 mm. latis utrinque glanduloso-punctatis obtusiusculis ascendentibus; capitulis paucis corymbosis saepius longe rigidiuscule pedicellatis ca. 1.3 cm. altis 13-floris; involucri squamis lanceolati-oblongis 9 mm. longis atropurpureis glanduloso-puberulis vix nervosis; corollis laete purpureis 7–9 mm. longis, tubo proprio externe glanduloso-puberulo modice et gradatim in fauces longiusculos ampliato, dentibus limbi anguste oblongis acutis patentibus vel recurvatis; styli ramis planis; achaeniis 5 mm. longis 10-costatis subteretibus puberulis; pappo duplici e squamis 5 brevibus hyalinis apice rotundatis et aristis 5 atropurpureis 5 mm. longis erectis scabriusculis composito. — On the mesa de la Sandia, Durango, Mexico, alt. 3050 m., 14 Oct., 1905, *C. G. Pringle*, n. 10,144 (type, in hb. Gray). This species possesses a very close habital similarity to *S. Pringlei* Wats., but may be readily distinguished by its copious glandular indumentum and especially

by the presence of the aristate pappus, which is quite lacking in *S. Pringlei.*

Fleischmannia arguta, n. comb. *Eupatorium argutum* HBK. Nov. Gen. et Spec. iv. 121 (1820). *E. quinquesetum* Benth. ex Oerst. Vidensk. Meddel. 1852, p. 79. *Fleischmannia rhodostyla* Sch. Bip. Flora, xxxii. 417 (1850). The type of *Eupatorium argutum* HBK. is still extant at the Museum of Natural History in Paris. It is clearly just the plant which has long passed as *Fleischmannia rhodostyla* and its much earlier specific name must accordingly be taken up.

Trichocoronis sessilifolia, n. comb. *Argeratum sessilifolium* Schauer, Linnaea, xix. 715 (1847); Hemsl. Biol. Cent.-Am. Bot. ii. 83 (1881). *Trichocoronis Greggii* Gray, Pl. Wright. i. 89 (1852). The type of Schauer's *Ageratum sessilifolium* is Aschenborn's no. 4, of which there is a well preserved specimen in the Royal Botanical Museum in Berlin. The habitat is given as Mexico, but without more particular locality, and the species has remained obscure. On examination it proves to be identical with the species later described as *Trichocoronis Greggii* by Dr. Gray. Gregg's plant (no. 807 of his last Mexican collection) is said to have come from the region between Mazatlan and the City of Mexico. Fortunately Mr. Pringle has rediscovered the species, and the fuller data of his label give definite information of at least one station, namely, marshes of Atequiza in the state of Jalisco. Priority necessitates the transference of the original specific name.

Eupatoriopsis Hoffmanniana Hieron. in Engl. Bot. Jahrb. xviii. Beibl. 43, p. 46 (1893). This Brazilian monotype was placed by its author in the subtribe *Piquerinae.* Dissection, however, shows that the anthers have distinct apical appendages quite as well developed as in many of the *Ageratinae.* There can be no doubt that the true affinity of the genus is with *Trichocoronis* Gray, Pl. Fendl. 65 (1849), with which it agrees closely in general habit, in its opposite sessile leaves, its long pedicelled heads, campanulate involucre with subequal subherbaceous bracts, its short purplish corollas with capanulate throat, and in its abortive setiform pappus. In fact, almost its only claim to generic separation is in its broad obovate quasi two-winged achenes, those of *Trichocoronis* being narrow and prismatically 4–5-angled.

Dissothrix imbricata, n. comb. *Stevia imbricata* Gardn. in Hook. Lond. Jour. Bot. v. 458 (1846). *Dissothrix Gardneri* Gray in Hook. Jour. Bot. & Kew Misc. iii. 223 (1851); Bak. in Mart. Fl. Bras. vi. pt. 2, 272 (1876). Dr. Gray's specific name, coined at a time of greater nomenclatorial laxity, must, according to priority, give place to the original name given by Gardner.

Trichogonia rhadinocarpa, n. sp., suffrutescens ramosa; ramis subsimplicibus teretibus striatis viridibus puberulis foliosis; foliis alternis lanceolati-oblongis crenato-serratis ad apicem obtusiusculum angustatis basi rotundatis vel breviter abrupteque cuneatis petiolatis utrinque pubescentibus et glanduloso-atomiferis viridibus subtus vix pallidioribus membranaceis 3–5.5 cm. longis 1.3–2.5 cm. latis, petiolo 8–15 mm. longo subtomentoso; inflorescentia terminali corymbosa ca. 16-capitulata, bracteis filiformibus 3 mm. longis, pedicellis filiformibus plus minusve flexuosis ca. 7 mm. longis; capitulis ca. 18-floris 8–10 mm. altis; involucri turbinato-campanulati squamis linearibus vel anguste oblanceolatis attenuatis ca. 7 mm. longis subuniseriatis dorso leviter nervatis puberulis apice tomentosis purpurascentibus; corollis angustis, tubo proprio gracili glaberrimo, faucibus brevissimis, limbo purpureo-tomentoso; achaeniis 4 mm. longis nigris 5-angulatis basi longe attenuato-stipitatis angulis obsolete scabratis; pappi setis plumosis sordide albis 4 mm. longis basi brevissime connatis. — *T. podocarpa* Bak. in Mart. Fl. Bras. vi. pt. 2, 216 (1876) pro parte, non Sch. Bip. — Near Tovar, Venezuela, *Fendler*, n. 651 (hb. Gray); Mariara, Venezuela, 800 m. alt., Aug. 1899, *Preuss*, n. 1508 (hb. Berol.); Ocaña, Prov. Ocaña, Colombia, *Schlim*, n. 178 (hb. Kew.). The Fendler specimen was taken to Geneva and carefully compared with the type of *T. podocarpa* Sch. Bip. (*Kuhnia podocarpa* DC.) and it was found to be clearly a distinct species, differing in various ways but most strikingly in its densely tomentose corollas. In the type of *T. podocarpa* the corollas are covered on the outside by large scattered waxy atoms but are otherwise glabrous. From *T. campestris* Gardn., *T. rhadinocarpa* differs in its much broader leaves, longer and more tapering achenes, etc.

Eupatorium altissimum L. Syst. ed. 12, 537 (1767). By the Index Kewensis, i. 915, this is referred to *E. ageratoides* L. f., but this is clearly a mistake. In the 12th edition of the Systema, p. 537, the description of *E. altissimum* is identical with the description of the same species in the first edition of the Species Plantarum, and it can be construed only as relating to the lanceolate-leaved plant which still very properly bears the name *E. altissimum*.

Eupatorium auriculatum Vahl, Symb. Bot. iii. 95, t. 72 (1794); DC. Prod. v. 174 (1836); Bak. in Mart. Fl. Bras. vi. pt. 2, 340 (1876); not Lam. This species, said by Vahl to come from Brazil, was fully described and clearly figured by him. It has, however, not been rediscovered since its description a century ago and has remained entirely obscure. Suspecting from Vahl's figure that the plant was not really a *Eupatorium* but a *Senecio*, the writer, with the aid of Dr. Greenman, who has a special knowledge of the latter genus, made

some efforts to identify the species among the Brazilian *Senecioneae*. This search proved wholly unsuccessful, and accordingly a wish to examine the type of this problematic plant added no small incentive to a recent visit to Copenhagen, where many of Vahl's plants are preserved. The specimen of the plant in question was easily found and corresponded in all respects to Vahl's description and plate. It proved as anticipated a *Senecio*, but what was even more interesting, a faint but still quite legible label on the back of the sheet disclosed the fact that the specimen had not come from Brazil, but had been collected by Commerson on the Isle of Bourbon in the Indian Ocean. With this important clue, it has been easy to identify it positively with *Senecio penicillatus* (Cass.) Sch. Bip. The synonymy of the species is as follows: —

Eupatorium tomentosum Lam. Dict, ii. 410 (1786).
" *auriculatum* Vahl, Symb. iii. 95, t. 72 (1794).
Mikania tomentosa Willd. Spec. Pl. iii. 1744 (1804).
Cacalia penicillata Cass. Dict. xlviii. 460 (1827).
Senecio penicillatus Sch. Bip. Flora, xxviii. 499 (1845).
Senecio tomentosus Cordemoy, Fl. de l'Île de la Réunion, 543 (1895), not Michx.

Although the specific names *tomentosus* and *auriculatus* are both earlier than *penicillatus* they have already been employed for other valid species of *Senecio* and are accordingly not available for this plant, which should continue to pass as S. PENICILLATUS (Cass.) Sch. Bip.

Vahl seems to have been quite aware of the identity between his *Eupatorium auriculatum* and the earlier *E. tomentosum* of Lam., as he has indicated this upon his label. Although Lamarck's species was also founded on material collected by Commerson on the Isle of Bourbon, he appends to his description the note "on la trouve aussi dans le Brésil," having probably confused with the plant of the Indian Ocean some habitally similar species of South America. It was doubtless this circumstance which led Vahl to ascribe his *E. auriculatum* to Brazil, notwithstanding the fact that his type-sheet bears a note apparently in his own hand to the effect that the plant came from the Isle of Bourbon.

Eupatorium confertifolium Klatt, Abh. Naturf. Ges. Halle, xv. 324 (1881). This species does not differ essentially from E. VACCINIIFOLIUM Benth. Pl. Hartw. 200 (1845).

Eupatorium coperense Hieron. in Engl. Bot. Jahrb. xxi. 330 (1895). This species, examined and photographed at the Royal Botanical Museum at Berlin, appears identical with the earlier E. ANGUSTIFOLIUM

(HBK.) Spreng. Syst. iii. 415 (1826), the type of which was examined and photographed at the Museum of Natural History in Paris.

Eupatorium cremastum, n. sp., fruticosum 3–4 m. altum; ramis teretibus glabris fusco-brunneis laevibus; foliis magnis oppositis tenuibus 16 cm. longis 4.5–6.5 cm. latis utrinque viridibus sublucidis ovato-oblongis acuminatis serratis penninerviis supra glabris subtus in nerviis lanulosis basi breviter acuminatis; petiolo 3–3.5 cm. longo; internodiis ca. 3 cm. longis; inflorescentiis laxis lateralibus pendulis 5–8 cm. longis pauci- vel multi-capitulatis; pedicellis 2–2.5 cm. longis capillaribus flexuosis obscurissime puberulis; capitulis 1.3 cm. latis ca. 10-floris; involucro perlaxo, squamis linearibus attenuatis ca. 10 pilosulis viridibus subaequalibus ca. 5 mm. longis 3.5 mm. latis gracillimis nigris curvatis deorsum angustatis etiam apicem versus paullulo decrescentibus; corollis 4.5 mm. longis glabris albis, tubo proprio gracili quam fauces anguste cylindrici breviori; pappi setis ca. 18 laete albis corollam subaequantibus. — Crest of the Sierra Madre in Michoacan or Guerrero, Mexico, alt. 2200 m., 17 Feb. 1899, *Langlassé*, n. 893 (hb. Gray, hb. Berol.).

Eupatorium Cursonii, n. sp., ramis atropurpureis teretibus fusco-tomentellis, internodiis brevibus 8 mm. longis; foliis oppositis lineari-oblongis attenuatis supra bullato-reticulatis sparse puberulis subtus reticulato-venosis tomentosis 9 cm. longis 8 mm. latis crassiusculis margine leviter crenulatis valde revolutis, petiolo ca. 1 mm. longo; capitulis 2–3 in summis ramorum axillaribus permagnis ca. 80-floris, involucri squamis subaequalibus lanceolatis, exterioribus subcoriaceis 2 cm. longis 4 mm. latis striatulis dorso granulari-puberulis apice subfiliformi-attenuatis, interioribus angustioribus et tenuioribus; receptaculo paleifero saltem ad marginem, paleis 2 cm. longis ad apicem fere capillaceum attenuatis; corollis anguste tubulosis glaberrimis 1 cm. longis, dentibus 5 brevissimis patentibus atropurpureis; antheris linearibus apice valde appendiculatis basi integerrimis; styli ramis clavatis planiusculis 6 mm. longis atropurpureis; achaeniis linearibus 7 mm. longis 5-angulatis in costis minute scabratis; pappi setis ca. 50 fere 1 cm. longis, plurimis exteriorum brevioribus. — Collected at Arequipa, Peru, by Mr. Curson. The sole specimen of this clearly marked species is in the herbarium of the British Museum of Natural History. It had evidently been in the herbarium of Nuttall, who had recognized its novelty and assigned it a specific name under the genus *Campuloclinium*. Unfortunately Nuttall's manuscript name has already been used in *Eupatorium* and therefore cannot be now taken up. In habit and probably in its affinities *E. Cursonii* approaches *E. Ballii* Oliv., from which, however, it differs decidedly in its subequal involucral bracts.

Eupatorium gracilicaule Sch. Bip. in herb., fruticosum 3 m. altum oppositirameum; ramis teretibus glaberrimis gracilibus, internodiis ca. 5 cm. longis; foliis ovatis longe acuminatis basi rotundatis vel brevissime acuminatis 3-nerviis leviter serrato-dentatis plus minusve falcatis utrinque glabris subtus haud vel vix pallidioribus minute glanduloso-punctatis ad 8 cm. longis 3–4 cm. latis, venulis subtranslucentibus, petiolo gracili patenti 2–2.5 cm. longo; paniculis magnis 2–3 dm. diametro rotundato-corymbosis oppositirameis folioso-bracteatis multicapitulatis obscurissime puberulis vel granulosis, ramis laxe patentibus, pedicellis gracillimis saepe flexuosis minute bracteolatis; capitulis 6–8 mm. altis ca. 13-floris; involucri squamis laxissime imbricatis linearibus acutissimis dorso sordide puberulis, intimis ca. 3 mm. longis subaequalibus 6–9, exterioribus paucis (2–3) brevioribus angustissimis; achaeniis 5-angulatis gracilibus glabris fuscis deorsum levissime angustatis; corollis glabris 3 mm. longis verosimiliter albidis, tubo proprio gracili in fauces modice ampliatos gradatim expanso, dentibus limbi 5 brevibus patentibus; pappi setis ca. 20 tenuibus albidis aequalibus simplicissimis corollam fere aequantibus. — Tlacolula, Mexico, Dec. 1839, *Ehrenberg*, n. 11,711 (hb. Berol., hb. Gray). This species in habit somewhat suggests *E. stillingiaefolium* DC. and *E. Mendezii* DC., but differs from each of them in being nearly glabrous and in its much less imbricated involucre, etc.

Eupatorium hemipteropodum, n. sp., herbaceum robustum ad 3 m. altum; caule meduloso subtereti valde striato-costato glabrato in sicco stramineo-brunnescenti; foliis oppositis magnis tenuibus ovatis utrinque glabris et viridibus supra levissimis longe petiolatis, inferioribus ovatis subacuminatis 1.8–2.5 dm. longis 12–15 cm. latis argute grosseque dentatis basi acuminatis et breviter in petiolo decurrentibus, petiolo 4–6 cm. longo, foliis supremis deltoideo-ovatis 8–10 cm. longis 5–7 cm. latis subduplice crenato-serratis basi acuminatis, petiolo fere a media parte apicem versus alato; panicula ovoidea thyrsoidea oppositiramea ca. 7 cm. diametro aequialta multicapitulata; capitulis ca. 10-floris; involucri squamis stramineis in apice obtuso vel rotundato brunneis pluriseriatim imbricatis, interioribus lineari-oblongis, exterioribus gradatim brevioribus ovatis ciliolatis; corollis anguste tubulosis glabris dentibus limbi brevissimis; pappi setis sordide albis corollam subaequantibus; achaeniis valde immaturis in et etiam inter costis pubentibus. — *E. quadrangulare* Millsp. Field Columb. Mus. Bot. i. 324 (1896), not DC. *E. populifolium* Millsp. l. c., not HBK. *E. aromatisans* Millsp. l. c. iii. 92, with figs. (1904), not DC. — YUCATAN: Izamal (where, acc. to Millspaugh, l. c., in general cultivation), *Gaumer*, n. 552 (hb. Field Mus., hb. Gray); Merida, *Valdez*, n. 92 (hb. Field Mus., hb.

Gray). This perplexing plant has several times been referred to the present writer, who may well be responsible for some of the several names under which it has passed. Renewed study of it shows that it possesses distinctions which appear to separate it from any described species. From *E. quadrangulare* it differs in its essentially terete stem; from *E. populifolium* (a species which should henceforth bear the name *E. morifolium* Mill.), it may be readily distinguished by its essentially membranaceous leaves of different dentation, and by its pubescent achenes, as well as by its half-winged petioles. Its nearest affinity is doubtless, as pointed out by Dr. Millspaugh, with the West Indian *E. aromatisans* DC., yet it cannot be satisfactorily placed in that species, as the leaves are much thinner, the upper ones crenate-dentate, not serrate, and the petioles only partially winged instead of being winged clear to the base, as is the case in *E. aromatisans*.

Eupatorium Holwayanum, n. sp., herbaceum gracile erectum vel decumbens subglabrum 3–5 dm. altum; caulibus teretibus plus minusve purpurascentibus striatulis obscurissime puberulis foliosis gracilibus haud 2 mm. diametro; foliis ternis vel oppositis vel praecipue in parte superiore caulis alternis ovatis vel rhomboideis acutiusculis pauciserratis 1.5–2 cm. longis 7–10 mm. latis 3-nerviis utrinque glabris viridibus basi cuneatis brevissime petiolatis; panicula laxe ramosa basi plus minusve folioso-bracteata, ramis gracilibus purpureis ascendenti-divergentibus saepius 1–5-capituliferis; capitulis 9 mm. diametro ca. 60-floris; involucri squamis valde inaequalibus lineari-lanceolatis pluriseriatim imbricatis attenuatis acutissimis striatis viridibus vel purpurascentibus; corollis albis 3.3 mm. longis tubulosis, tubo proprio brevissimo, faucibus anguste tubulosis multo longioribus glabris, dentibus limbi 5 externe puberulis; achaeniis 5-angulatis fuscescentibus 1.7 mm. longis in angulis scabratis; pappi setis ca. 20 albis tenuissimis scabratis. — Dry banks, Sierra de San Felipe, alt. 2150 m., 17 Nov. 1894, *C. G. Pringle*, n. 5683 (hb. Gray), 14 Nov. 1903, *E. D. W. Holway*, n. 5418 (hb. Gray). This plant was at first referred to *E. trinervium* Sch. Bip., to which it has considerable similarity. It may be readily distinguished, however, by its much smaller leaves of an ovate or rhombic form, and by the lack of pubescence regularly found in *E. trinervium*.

Eupatorium leptophyllum DC. Prod. v. 176 (1836). This species has long been misunderstood and neglected. It was originally described from material collected about Savannah, Georgia, by Herbemont, and was regarded by Torrey and Gray (Fl. ii. 83) as merely a smoothish variety (their var. *glabrum*, l. c.) of *E. foeniculaceum* Willd. Dr. Chapman and Dr. Small in their floras of the Southern States do not

mention the plant either as a species or variety. The material now available shows that *E. leptophyllum* was well grounded and is readily distinguishable from the related species. Among these, it most nearly approaches *E. capillifolium* (Lam.) Small (*E. foeniculaceum* Willd.), and has similar very fine filiform-linear entire, pinnate, or dissected leaves, but it differs in the long simple recurved-spreading secund-racemose branches of its inflorescence, the heads of *E. capillifolium* being borne in compound somewhat fastigiate leafy panicles. In *E. capillifolium*, furthermore, the involucral scales are green and oblong, rather abruptly pointed and but slightly scarious at the margins, while in *E. leptophyllum* they are inclined to be brown (in dried specimens) and have strongly contrasting white margins. In form they are linear-oblong or lance-linear and tend to be attenuate, often ending in a very sharp point. The simple recurved racemose branches of the inflorescence are 4–10 cm. long, and as DeCandolle remarks in the original description, the inflorescence suggests strongly that of some of the golden-rods. The following specimens of *E. leptophyllum* have been examined: — GEORGIA: near Savannah, *Herbemont* (hb. DC.). SOUTH CAROLINA: damp pine land, Santee Canal, September, *Ravenel* (hb. Gray). FLORIDA: without locality, *Leavenworth*; Braidentown, *Tracy*, n. 7099 (hb. Gray), distributed as *E. capillifolium*. The species shows some variation in its leaves. They are described as entire by DeCandolle, and this is true in the upper parts of the specimens at hand, but the lowermost leaves when shown are pinnately divided into filiform or narrowly linear segments. In a second specimen collected on the Santee Canal by Ravenel (October), the leaves are not only more dissected than in the others, but the segments, although still very narrow, are distinctly flat rather than filiform. The close correspondence of all these specimens, however, in the more essential characters of inflorescence, involucres, flowers, achenes, and pappus, confirm the belief that they are only individual or formal leaf-variations of *E. leptophyllum* DC.

Eupatorium loxense Klatt, Ann. k. k. Naturh. Hofmus. Wien, ix. 357 (1894). This species, founded on a plant collected by Jameson at Loxa, Ecuador, has been examined both as to its type preserved in the herbarium of the Imperial Natural History Museum at Vienna and the specimen in the herbarium of the late Dr. Klatt. It is clearly the staminate plant of a *Baccharis*, and so far as may be judged from the characters of B. BERBERIFOLIA HBK. Nov. Gen. et Spec. iv. 57 (1820), may well belong to that species.

Eupatorium menthaefolium Poepp. ex Spreng. Syst. iii. 412 (1826). Although this Cuban species is kept up as a *Eupatorium* by Hooker

and Jackson in the Index Kewensis i. 118 (1893), it was long ago transferred to *Vernonia* by Lessing, Linnaea, iv. 268, a disposition fully confirmed by a recent examination of the type preserved in the herbarium of the Imperial Natural History Museum at Vienna. Unless some earlier specific name is found, the plant should certainly stand as VERNONIA MENTHAEFOLIA Less.

EUPATORIUM MORIFOLIUM Mill. Gard. Dict. ed. 8, no. 10 (1768). The type-specimen of this hitherto obscure species was recently examined at the herbarium of the British Museum of Natural History. It was collected at Vera Cruz, Mexico, by Dr. Houston, and proves to be identical with the plant long familiar under the later name of *E. populifolium* HBK. Nov. Gen. et Spec. iv. 111 (1820). *E. morifolium* Mill. seems to have been overlooked by Mr. Hemsley, as it is omitted from the Biologia Centrali-Americana, but it is as well characterized as most species of its date and must be reinstated for the well-known plant to which the name was clearly applied.

Eupatorium myosotifolium Jacq. Ic. Pl. Rar. iii. 15, t. 582 (1786–1793), & Coll. ii. 341 (1788). This species was described from cultivated specimens which had been raised from seeds supposed to come from tropical America. The plant is well figured by Jacquin, and it is clear, even from his illustration, that it does not belong to the genus *Eupatorium* nor even to the *Eupatorieae*, for the style-branches are short and decidedly recurved. An examination of an authentic specimen preserved in the herbarium of the Imperial Natural History Museum at Vienna fully confirmed the correctness of the plate and showed that the plant belongs to the baccharoid *Astereae*, probably to the genus *Conyza*.

Eupatorium nubigenoides, n. sp., inflorescentia excepta glaberrimum; ramis lignescentibus teretibus medulosis; foliis oppositis longe petiolatis tenuissimis ovati-oblongis vel late lanceolatis penninerviis serratis utrinque glaberrimis viridibus utroque acuminatis ca. 13 cm. longis ca. 5 cm. latis, dentibus parvis incurvis tenuiter cuspidatis, petiolo obcompresso nudo ca. 5 cm. longo; panicula oppositiramea ramosissima supra rotundata polycephala puberula vel tenuiter tomentella folioso-bracteata; capitulis pedicillatis ca. 10-floris 6 mm. altis; involucri campanulato-subcylindrici squamis albescentibus adpressis valde imbricatis ca. 4-seriatis multi-striatulis, exterioribus brevissimis ovatis acutiusculis ciliolatis intermediis ovato-oblongis apice rotundatis glabris gradatim longioribus, intimis similibus sed anguste oblongis obtusis; corollis albis anguste tubulosis 3 mm. longis glabris sine faucibus ullis distinctis, dentibus limbi deltoideis brevissimis patentibus; achaeniis 5-angulatis 1 mm. longis fuscis glabris ad basin leviter

attenuatis; pappi subsparsi setis tenuissimis albis. — Pansamalá, Depart. Alta Verapaz, Guatemala, June, 1886, alt. 1150 m., *H. von Tuerckheim*, n. 928 (distrib. by J. D. Smith). This specimen was first sent out as *E. aromatisans* DC. Its identification was then changed at the mistaken suggestion of the writer to *E. nubigenum* Benth. Compared at the Royal Gardens of Kew with Hartweg's n. 587, the type of Bentham's *E. nubigenum*, this plant proved to be distinct. *E. nubigenum* has larger flowers, longer achenes, closely sessile heads, and strongly angled branches.

Eupatorium nutans HBK. Nov. Gen. et Spec. iv. 105 (1820). This name has been regarded as a somewhat doubtful synonym of *Brickellia secunda* Gray. The type, however, when examined at the herbarium of the Museum of Natural History in Paris, proved to be B. PENDULA Gray, Pl. Wright. i. 85 (1852). *Bulbostylis pendula* DC. Prod. v. 138 (1836). *Eupatorium pendulum* Schrad. Cat. Sem. Hort. Goett. 1830, acc. to DC. l. c. Although the specific name *nutans* is earlier than *pendulum*, it is no longer applicable in *Brickellia* owing to the existence of the valid homonym *B. nutans* Robinson & Greenman, Am. Jour. Sci. l. 152 (1895).

EUPATORIUM OVALIFLORUM Hook. & Arn. Bot. Beech. 297 (1840). This species was long known to the writer from the original description only, and from the characters there given could not be positively distinguished from the plant, also of western Mexico, later described as *E. Bertholdii* Sch. Bip. in Seem. Bot. Herald. 299 (1856). As others may encounter difficulty in separating these nearly related and habitally similar species, it may be well to record the differences, which were found on a comparison of authentic specimens in the herbarium of the Royal Gardens at Kew. In *E. ovaliflorum* the leaves are permanently tomentulose above as well as below and they are decidedly pale beneath; the involucres are ovoid and 3.8 mm. in thickness. In *E. Bertholdii*, on the other hand, the leaves are somewhat scabrous with scattered hairs above and green beneath; while the involucres are more narrowly ovoid, 2.3 mm. in thickness.

EUPATORIUM PALMERI Gray, Proc. Am. Acad. xxi. 383 (1886). From the typical form of this species, which has its leaves grayish-tomentulose beneath and its involucral scales finely pubescent, the following smoothish caudate-attenuate leaved plant would appear quite distinct were it not for the existence in western Mexico of some intermediate forms, which appear to show that the differences, although conspicuous, are by no means constant.

Var. **tonsum**, n. var., foliis ovato-lanceolatis longissime attenuatis utrinque glabris remote serrulatis vel integris ad 14 cm. longis ad

4.2 cm. latis; capitulis pyramidato-paniculatis ca. 5-floris; involucri squamis viridibus striatis acutissimis vix pubescentibus; antheris apice brevissime appendiculatis. — El Ocote, Michoacan or Guerrero, alt. 300 m., 10 November, 1898, *Langlassé*, n. 616 (hb. Gray, hb. Berol.). Said to be a shrub 1.5 m. high with grayish flowers.

Eupatorium pelotrophum, n. sp., fruticosum 1.5 m. altum; ramis gracilibus teretibus fuscis puberulis; internodiis ca. 5 cm. longis; foliis oppositis petiolatis ovatis longe acuminatis serratis basi rotundata et apice caudato-attenuato integerrimis a basi 3(–5)-nerviis 7–10 cm. longis 2–4 cm. latis firmiusculis utrinque viridibus scabriusculis, petiolo fusco-puberulo ca. 1 cm. longo; cymis axillaribus glomeruliformibus oppositis ca. 12-capitulatis 2–3 cm. diametro, pedicellis 1–5 mm. longis teretibus sordido-tomentellis, bracteolis minimis fuscis; involucris subcylindrici-campanulatis saepissime 4-floris, squamis ca. 9 valde inaequalibus appresse imbricatis lanceolato-linearibus obtusis brunneis dorso pilosiusculis, interioribus ca. 3 mm. longis; corollis albis ex involucro longe exsertis ca. 4 mm. longis glabris, tubo proprio gracili in fauces cylindricos subaequilongos leviter ampliato, dentibus limbi brevissimis suberectis; achaeniis (immaturis) fuscis obscure granulatis quam corollae multo brevioribus; pappi setis albis rectis ca. 20 sursum scabriusculis corollam aequantibus. — In clayey soil on the crest of the Sierra Madre in Michoacan or Guerrero, alt. 2300 m., 16 February, 1899, *Langlassé*, n. 880 (hb. Gray). This species is clearly related to *E. tubiflorum* Benth. and *E. areolare* DC., but may be readily distinguished by its peculiar globular axillary inflorescences and by the fact that the pappus is fully as long as the corolla.

Eupatorium purpureum L., var **Bruneri** (Gray), n. comb., foliis oblongo-lanceolatis ternis vel quaternis vel quinis serratis firmiusculis subtus plus minusve cinerascenti-puberulis vel tomentellis albescente reticulato-venulosis; corymbis planiusculis vel modice convexis. — *E. Bruneri* Gray, Syn. Fl. i. pt. 2, 96 (1884); Coult. Man. Rocky Mt. Reg. 142 (1885). *E. atromontanum* Nelson, Bot. Gaz. xxxi. 400 (June, 1901). *E. Rydbergi* Britton, Man. 921 (Oct. 1901). — Dr. Gray's original characterization of *E. Bruneri* was drawn from a very poor specimen and is so misleading that it is by no means surprising that it has never been rightly understood. The leaves are not opposite, as described, but are in whorls of three. In pubescence, venation, toothing, and texture, they correspond accurately with the widely distributed western form of *E. purpureum*, which as stated above has received two subsequent specific names. The form, although fairly well marked in its extreme, appears to pass by easy transitions into the typical form of *E. purpureum* and would therefore seem best treated as a variety.

In range it extends from Iowa to British Columbia and southward in the Rocky Mountains to New Mexico.

Eupatorium rapunculoides, n. comb. *Stevia rapunculoides* DC. Prod. v. 124 (1836). *Eupatorium dasycarpum* Gray, Proc. Am. Acad. xxii. 420 (1887); Robinson, ibid. xxxvi. 478 (1901).

EUPATORIUM REMOTIFOLIUM DC. Prod. v. 165 (1836). This species is reduced without comment by Baker in Mart. Fl. Bras. vi. pt. 2, 205 (1876) to *E. Vitalbae* DC., but the two species in question have not the smallest resemblance. It can only be inferred that Mr. Baker was misled through some transposition of labels or similar slip. The plants are by no means similar in habit, leaf texture, inflorescence, or involucre. The marked difference in the size of the heads is quite sufficient to show them distinct species. In *E. Vitalbae* the florets, including the mature achene, are 10–12 mm. long, while in *E. remotifolium* they are, when measured in the same manner, only 4–5 mm. long.

Eupatorium resinosum Poepp. [& Endl.] Nov. Gen. et Spec. iii. 54 (1845), not Torr. From an examination of the type-specimen of this obscure species, which is to be found in the herbarium of the Imperial Natural History Museum at Vienna, it is clear that it is identical with E. LAEVIGATUM Lam. Dict. ii. 408 (1786).

EUPATORIUM RUBRICAULE HBK. Nov. Gen. et Spec. iv. 124 (1820). Although excellently described by Kunth, this species appears never to have been recognized. Hemsley (Biol. Cent.-Am. Bot. ii. 100) refers no material to it beyond the original specimen collected by Humboldt & Bonpland, and no more recent collection of it seems to be on record. The type was found, however, to be exactly the plant for some years known as *E. amplifolium* Gray, Proc. Am. Acad. xv. 28 (1880), and well shown by the following exsiccatae: Parry & Palmer's no. 334 from San Luis Potosi, Pringle's no. 4272 from cool cañons near Pazcuaro, Michoacan, Palmer's no. 165 (coll. of 1902) from Alvarez, San Luis Potosi, and L. C. Smith's no. 858 from the mountains of Jayacatlan, alt. 2150 m., Oaxaca. Dr. Gray's later specific name must, of course, drop into synonymy. Why *E. rubricaule* HBK., which is a large-leaved perennial, should have been referred to *E. guadalupense* Spreng. by the Index Kewensis is not clear.

EUPATORIUM SAGITTATUM Gray, Pl. Wright. i. 88 (1852). This species has in general ovate-oblong sagittate or hastate leaves considerably longer than broad. In its wide deltoid leaves the following plant is strikingly different, although maintaining the essential characteristics of the species.

Var. **deltophyllum**, n. var., fruticosum oppositirameum habitu

capitulis involucri squamis formae typicae simile; foliis multo latioribus deltoideis 3–4 cm. longis 2–4.4 ! cm. latis apice et angulis inferioribus transverse divaricatis acutis. — Near Culiacan, Sinaloa, Mexico, coll. *Schaffner* (type, in hb. Gray).

EUPATORIUM THYRSOIDEUM Moc. ex DC. Prod. v. 150 (1836). Some years ago the writer (Proc. Am. Acad. xxxvi. 484) stated the belief that this plant was identical with *E. quadrangulare* DC. l. c. However, subsequent study of more copious material and a re-examination of the type specimens in the Prodromus Herbarium at Geneva have shown conclusively that the two species are wholly distinct notwithstanding considerable habital resemblance. To *E. thyrsoideum*, which may be recognized by its roundish stem, more glomerate-thyrsoid inflorescence, and softer less stramineous involucral scales, the following specimens may be referred: Dr. Palmer's no. 1048 (coll. of 1890) from Manzanillo, and his no. 1162 (coll. of 1891) from Colima, W. G. Wright's no. 1355 from San Blas, Langlassé's no. 650, collected on granitic soil at Cajinicuilar, alt. 300 m., in Michoacan or Guerrero, Baker's no. 2302, Volcan El Viejo, Dept. Chinandega, Nicaragua, and Barclay's no. 2719 from Tiger Island, Gulf of Fonseca.

Eupatorium tolimense Hieron. in Engl. Bot. Jahrb. xix. 45 (1894). The writer, after examining the type of this species at the Royal Botanical Museum at Berlin and the type of E. PELLUCIDUM HBK. Nov. Gen. et Spec. iv. 108 (1820), which is preserved in the herbarium of the Museum of Natural History at Paris, is unable to find any differences of importance between them.

EUPATORIUM URTICAEFOLIUM Reichard, Syst. iii. 719 (1780). *Ageratum altissimum* L. Spec. Pl. ii. 839 (1753). *Eupatorium altissimum* Murr. Syst. Veg. ed. 13, 614 (1774), not L., nor Murr. l. c. 613. *E. ageratoides* L. f. Suppl. 355 (1781). *Kyrstenia altissima* Greene, Leafl. i. 8 (1903). A consistent application of the rules of priority necessitates the reviving of Reichard's name for our common and attractive North American *Eupatorium* which has long passed as *E. ageratoides*. Furthermore, in consequence of this revival of Reichard's *E. urticaefolium*, it is necessary to suppress the later *E. urticaefolium* L. f. Suppl. 354 (1781). This, however, is no great misfortune, for the species of Linnaeus filius has been in recent times entirely misinterpreted, the name having been applied by English and German botanists to a coarse annual, widely distributed in tropical America, having rather long pedicels and ovate-lanceolate to lance-linear leaves. This plant has borne many names, of which the earliest appears to be the hitherto obscure *E. pauciflorum* HBK. Nov. Gen. et Spec. iv. 120 (1820). Very different from this is the type of *E. urticaefolium* L. f.,

which is still extant in the herbarium of the Linnean Society of London. It is a Colombian plant, apparently perennial, with deltoid-ovate, strongly cordate leaves and contracted inflorescence, the pedicels being very short. It is not yet certain whether this plant has received a later name, but it is pretty close to *E. ballotaefolium* HBK. and of course has nothing whatever to do with the *E. urticifolium* of the Flora Brasiliensis or of recent writers on the flora of Argentina and Paraguay.

MIKANIA BADIERI DC. Prod. v. 194 (1896). This excellent species is well marked by its coriaceous glabrous essentially entire leaves, which are rather abruptly acuminate, ending in a caudate and often falcate tip. The petioles are furthermore much flattened and rather broad. The species, notwithstanding these distinctive characters, has been reduced by Grisebach (Veg. Karaib. 85) to *M. latifolia* J. E. Smith (Rees, Cyclop. xxiii. n. 8). Grisebach also implies that it is suspiciously close to *M. amara* Willd. However, the inflorescences in *M. Badieri* are pyramidal panicles in which the heads are subspicately arranged, while both in *M. amara* Willd. and in *M. latifolia* J. E. Smith (ex char.) the heads are borne in corymbs. In the herbarium of Lamarck there is a sheet of *M. Badieri* labelled in the hand of Lamarck himself "Eupatorium vincaefolium Lam. dict. no. 39 de Mr. Badier de la guadeloupe No 137." At first sight it would appear that this was an authentic type of *E. vincaefolium* Lam. and that his earlier specific name should take the place of DeCandolle's later *Badieri*. However, Lamarck did not cite the plant of Badier in his Dictionary, but on the other hand distinctly states that his *E. vincaefolium* was founded on South American material. Indeed, most of the characters are evidently drawn from Aublet's plate and description of *E. parviflorum*, which Lamarck reduces to a synonym of his own species. Although Badier's plant of Guadeloupe possesses some habital similarity to the South American one, the latter lacks the broad petioles and the peculiar acumination and is doubtless a distinct species. Obviously, it is to the South American plant that Lamarck's name *E. vincaefolium* was applied.

Mikania Houstoniana, n. comb. *Eupatorium Houstonianum* L. Spec. ii. 836 (1753). *E. Houstonis* L. Syst. ed. 10, 1204 (1759). *E. fruticosum* Mill. Dict. ed. 8, no. 6 (1768). *Mikania Houstonis* Willd. Spec. iii. 1742 (1804). The rule of priority of the specific name requires the restoration of the earlier adjectival form.

BRICKELLIA ATRACTYLOIDES Gray, Proc. Am. Acad. viii. 290 (1870). Of this species, *Coleosanthus venulosus* A. Nelson, Bot. Gaz. xxxvii. 262 (1904), is an exact synonym.

BRICKELLIA MICROPHYLLA Gray, Pl. Wright. i. 85 (1852); *Bulbostylis microphylla* Nutt. Trans. Am. Phil. Soc. n. s. vii. 286 (1841). To the synonymy of this species may be added *B. cedrosensis* Greene, Bull. Torr. Bot. Club, x. 86 (1883); *Coleosanthus cedrosensis* Greene, Erythea, i. 54 (1893).

BRICKELLIA OBLONGIFOLIA Nutt. Trans. Am. Phil. Soc. n. s. vii. 286 (1841). Of this species, *Coleosanthus humilis* Greene, Pittonia, iv. 124 (1900), appears to be a synonym.

Brickellia paniculata, n. comb. *Eupatorium paniculatum* Mill. Gard. Dict. ed. 8, no. 15 (1768). *E. Verae-Crucis* Steud. Nom. ed. 2, i. 609 (1840). *Ageratum paniculatum* Hort. and *Eriopappus paniculatus* Hort. ex Steud. l. c. *Eupatorium rigidum* Benth. Pl. Hartw. 88 (1841), not Sw. *Brickellia Hartwegi* Gray, Pl. Wright. i. 85 (1852). Miller's *Eupatorium paniculatum* seems never to have been studied or accurately identified. It is evident that Steudel's renaming of the species was purely a bibliographical change incident to his compilation, and involving no personal examination of the plant. Miller's type, collected at Vera Cruz, Mexico, by Dr. Houston, is still extant in the herbarium of the British Museum of Natural History, and proves to be the plant which has for some time been passing under the name of *Brickellia Hartwegi* Gray. There seems no reason why Miller's name should not be restored and transferred to the correct genus. Steudel's purpose in renaming *E. paniculatum* Mill. (1768) was doubtless that he might maintain the better known but much later homonym of Schrader (1832), which, however, has since proved a synonym of *E. microstemon* Cass. Link, Enum. ii. 306 (1822), erroneously united under the name *E. paniculatum* the very different plants of Miller and Schrader, belonging as we now see to two distinct genera. The unwarranted name *E. Verae-Crucis* still persists in some botanical gardens.

Cacalia asclepiadea L. f. Suppl. 352 (1781). *Senecio* (?) *asclepiadeus* DC. Prod. vi. 422 (1837). This doubtful species from Colombia seems never to have been studied or accurately placed. Fortunately the type-specimen is still extant in the herbarium of the Linnean Society of London. It proves to be identical with *Eupatorium angustifolium* Spreng. Syst. iii. 415 (1826); *Mikania angustifolia* HBK. Nov. Gen. et Spec. iv. 138 (1820). Although the Linnaean specific name is older, it cannot be applied in *Eupatorium* because of the existing homonym, *E. asclepiadeum* DC. Prod. v. 148 (1836). *Cacalia asclepiadea* L. f. should therefore drop into the synonymy of EUPATORIUM ANGUSTIFOLIUM (HBK.) Spreng. and the genus *Cacalia* (or *Senecio*) may thus be freed from a dubious species.